THE TWENTY-FOURTH YEARBOOK

OF THE

NATIONAL SOCIETY FOR THE STUDY OF EDUCATION

PART II
ADAPTING THE SCHOOLS TO INDIVIDUAL DIFFERENCES

THIS YEARBOOK WILL BE DISCUSSED AT THE CINCINNATI MEETING OF THE SOCIETY, TUESDAY, FEBRUARY 24, 1925, 8 P. M.

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PART II

ADAPTING THE SCHOOLS TO INDIVIDUAL DIFFERENCES

Prepared under the Direction of Carleton W. Washburne

By

FRANKLIN BOBBITT, B. R. BUCKINGHAM, STUART A. COURTIS, WILLIAM S. GRAY, ERNEST HORN, JESSIE MACKINDER, HELEN PARKHURST, A. H. SUTHERLAND, MARY A. WARD, CARLETON W. WASHBURNE

Edited by
GUY MONTROSE WHIPPLE

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EDITOR'S PREFACE

In the *Twenty-first Yearbook* on "Intelligence Testing" and in the *Seventeenth Yearbook, Part II,* on "Measurement of Educational Products" much material was presented to demonstrate the striking range of individual differences found in the native capacity and the educational achievements of pupils. No one at all conversant with the facts there set forth can avoid the conviction that the mass instruction of pupils and the promotion of them in large groups annually or semi-annually, as we do in the regular grade system, whatever merits they may have administratively, leave much to be desired pedagogically. One method of meeting in part the difficulties of mass instruction was extensively treated in the *Twenty-third Yearbook, Part I,* on "The Education of Gifted Children," and in its predecessor, the *Nineteenth Yearbook, Part II,* on "Classroom Problems in the Education of Gifted Children." Is it desirable and practicable to carry differentiation still further—to the complete individualization of instruction? This is the issue raised in the present volume. Whether the reader thinks the answer is 'yes' or thinks it is 'no,' he will surely find the presentation of facts and arguments set forth by Superintendent Washburne's Committee of very lively interest. It seems to me that this *Yearbook* is a real challenge to the schoolmen of this country. I hope it will be widely read and as widely debated, for thus this Society will fulfill its purposes—"to carry on the investigation of educational problems, to publish the results, and to promote their discussion."

G. M. W.

INTRODUCTION AND SUMMARY

By Carleton W. Washburne
Winnetka, Illinois

The widespread use of intelligence tests and achievement tests during the past few years has made every educator realize forcefully that children vary greatly as individuals and that any one school grade contains children of an astonishingly wide variety of capacity and achievement.

It has become palpably absurd to expect to achieve uniform results from uniform assignments, made to a class of widely differing individuals. Throughout the educational world there has therefore awakened a desire to find some way of adapting schools to the differing individuals who attend them. This desire has resulted in a variety of experiments.

These experiments may be classified under two general heads: there are those which seek to retain the present classroom organization with its comparatively uniform pace and annual promotions, and there are those which break away more or less completely from the traditional type of organization.

Among the former there are two types. The first type seeks to provide for atypical children by special coaching of the slower ones or plus assignments for the brighter ones, or a combination of these two. The second type attempts to subdivide each grade into ability groups as nearly homogeneous as possible—a bright group, an average group, and a slow group. These groups receive instruction which is supposed to be appropriate to the typical child of the group. The bright group may progress more rapidly than the others in some systems, or in other systems may simply have a richer curriculum or higher standards. Such ability-grouping is one of the most widespread forms of attempting to adapt schools to individual differences.

The second general class of experiments substitutes individual subject promotions for class promotions. Each child, within certain limits, moves forward at his own rate in the mastery of the common essentials of each subject. Special techniques have been developed to make this possible under public school conditions. Schools which

have this highly individualized work, however, usually confine it to the common essentials—those knowledges and skills which are going to be used by practically every one: reading, writing, the fundamentals of arithmetic, spelling, the formal side of language (punctuation, capitalization, etc.), and perhaps the factual side of history and geography. Having individualized such subjects, these schools usually provide many opportunities for group and creative activities—for projects in which many children can engage co-operatively, for discussions, dramatizations, self-governing assemblies, etc. These socialized activities are not usually made a means to the end of mastering the common essentials, but are rather a means to developing the child's initiative, originality, and co-operativeness.

It has been schools of the latter class which have contributed most of the experimental data bearing upon the effects of individual work. Statistical studies yielding significant results have been carried out in the San Francisco State Teachers' College, in Los Angeles, in Detroit, in Winnetka, and to some extent in the Marlborough School in London. These experiments have contributed sufficient data to justify at least tentative acceptance of the following conclusions:

1—Ability grouping is only a half-way step and does not fully solve the problem of adjusting schools to individual differences.

2—Individual work does save time, especially for the brighter children and those children who would normally be repeaters.

3.—In Winnetka, at least, individual work results in devoting an unusually large amount of time to group and creative activities.

4—The tendency of individual instruction does not seem to be so much toward getting children through school at an early age, as toward the using of saved time for broader and deeper education.

5—Individual promotions appear definitely to decrease retardation and corresponding over-ageness.

6—Individual work increases efficiency in the tool subjects.

7—There is no evidence that individual work costs more than class work. The meager data available tend to indicate that it does not affect costs one way or the other.

8—Individual work does not appear to place an undue burden upon the teacher.

9—Individual work in the elementary schools does not result in inability to do class work efficiently in high school.

There are a number of serious problems involved in any attempt to place schools on an individualized basis. Perhaps the most serious of these is the securing of suitable textbook materials. Another is the proper training of teachers.

The technique of individual instruction itself is still far too new to be definitely established. Questions arise as to size of classes, programs, the extent to which children should be allowed to enter high school or college at a younger age than is now customary, the question as to the basis on which class groups should be organized, the question of supervision, and above all the relationship that should exist between the individual work in common essentials and group and creative activities.

A tentative, yet practicable program of individualization, however, is presented in Section V of this *Yearbook*. The essence of this program may be very briefly stated:

1—The curriculum is to be outlined in terms of the common essentials on the one hand, and group and creative activities on the other.

2—The common essentials are to be subdivided into specific measurable units of achievement.

3—Complete diagnostic tests are to be prepared to cover each of these units of achievement.

4—Self-instructive and self-corrective practice materials are to be prepared to enable children to get ready for the tests individually or to repair deficiencies shown by the tests. These materials will probably ultimately result in a new type of textbook. Temporarily they may be merely assignment sheets accompanying, supplementing, and clarifying the ordinary text.

5—A simple record system is to be incorporated by means of which each child's progress may be noted.

6—Provision is to be made for individual subject promotions, not necessarily involving change of room, but merely continuance from the completed unit in any subject to the next unit in that subject.

7—Ample provision is to be made (about half the morning and half the afternoon) for a wide variety of group and creative activities.

It is felt by some that individual instruction is not the only alternative to the traditional class lock-step system. Some people, for example, feel that the project method, wherein each child contributes his particular part to a group project, possesses sufficient flexibility to make the necessary adaptation to individual differences. Unfortunately, statistical data and controlled experiments in support of this contention are lacking.

The issue between those who favor the project method and those who favor individual instruction is in certain respects a minor one. Both groups believe that every child should master the essentials. Both groups believe that the amount of practice and time that is sufficient for one child may be insufficient for another. Both believe that there should be much opportunity for socialized and co-operative endeavor and for self-expression. The fundamental question at issue is whether projects shall be used as a means of teaching the common essentials, or whether these common essentials shall be independent, though motivated and applied in projects—a difference which is somewhat academic, and concerning which neither side has any statistical proof of its superiority.

The line of demarcation between those who would individualize schools completely, and those who would use ability-grouping or systems of coaching laggard children and enriching the education of the brighter ones, is also clear, but not of grave consequence. Most people who advocate ability grouping, if they are thoughtful and are familiar with the wide differences that exist among individuals, recognize that ability grouping is but a step toward individualization—a step which makes individual instruction easier both to initiate and to incorporate. To stop at ability groupings would be to fail to solve many of the problems involved in the differences that exist among children. Yet ability grouping is one of the best first steps toward individual instruction.

As to coaching of laggards and enriching the curriculum of bright children, these, too, become simply preliminaries—and helpful preliminaries—to complete individual instruction. Almost every child is at some time in some subject either a laggard or above average in his rate of progress. Methods which are now only applied to the extreme cases will naturally in time be applied to the less aggravated cases.

The diversity of the experiments is after all rather an encouraging sign. Out of the accumulated experiences and the heated discussions of the advocates of various forms of individual work will come clearer light and better technique. This will enable schools truly to adapt themselves to the wide differences that exist among individuals and at the same time to encourage socialized activity and a co-operative spirit.

Complete individual instruction means developing the individual on his social side fully as much as it means developing his initiative and his originality, and fully as much as it means giving him an opportunity to master at his own natural rate each element in the common essentials.

SECTION I

FACTORS CAUSING MALADJUSTMENT OF SCHOOLS TO INDIVIDUALS

This Section of the *Yearbook* attempts to set forth the basic reasons for individual instruction. Dr. Sutherland, through his extensive experience first as a 'regular' psychologist and later as school psychologist for the public schools of Los Angeles, delves into the various factors causing maladjustment of the present lock-step system of schools to the differences existing among individual children.

By A. A. Sutherland
Los Angeles, California

A. Individual Differences Among Children

1. Fundamental Differences

The progress of our day in the science of education is nowhere more evident than in the field of individual differences. Here is clear recognition of the fact that it is the individual child who is to become the citizen, the leader, or the criminal, the public charge; and that both the material and spiritual values of the age will depend in large measure upon the habits and attitudes set up in the schools on the part of each individual child.

But public education is not keeping pace with the proved outcomes of research in this field. Mass methods are still in use, although they have been shown to be not only unintelligent, because impossible of specific direction, but actually brutalizing in their effect upon both pupil and teacher. For when pupils are at work at a level too high for their intelligence, the effect is brutalizing; when they are at work at a level too low for their intelligence, the effect is again brutalizing; and when teachers in large numbers reach a state of violent outburst over iniquities of organization which prevent them from doing their best work; or fall into a passive routine attitude of hopeless fatuity, still the effect is brutalizing.

This is not to say that the schools are no better than they were twenty-five or thirty years ago, but to say that, although they do constantly improve under criticism, there is yet need for criticism more specifically directed. If, in addition to pointing out just what is wrong, and why it is wrong, the critic can point to his own successful efforts to improve the situation, his criticism, of course, gains in force and value. Radical improvement, however, is impossible without recognition of individual differences. Such recognition necessitates changes in administrative organization and procedure, not merely to keep up with the known facts about the needs of children under training for effective citizenship, but even more to make possible craftsmanship and professional ideals.

We are slowly emerging from the 'patent medicine' age in education during which, without attempting to discover the exact nature of a given difficulty, we prescribed one single remedy, by topic and page, to cure all ills. Dr. Bobbitt's statement[1] of certain types of training which the teachers of the future will require, opens the way to more scientific diagnosis and treatment.

This concept of Individual Differences has come to include two rather distinct subjects of inquiry that are overlapping at present and therefore confused. One field compares children *en masse* in order to establish norms and standards of investigatory procedure. It deals with intelligence tests, subject matter tests, methods of averaging indices, etc. It is founded on the hypothesis that the children now in school are placed as they should be, and are making, on the average, progress according to their abilities. Kelley[2] explains that "there are three factors which make for overlapping: (1) unreliability of tests, (2) unimportance of the function tested, (3) failure of proper classification." He adds the warning "and only insofar as the first two are known to be the causes [of overlapping] can improper classication be established."

There is, however, another source of information and type of evidence which does not fall within the province of the statistician. It is familiar to the research man in a city school system and is known as "weeping, wailing, and gnashing of teeth." This occurs

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[1] Franklin Bobbitt. "Discovering and formulating objectives of teacher-training institutions." *J. of Educ. Research*, 8: 1924, p. 187.

[2] T. L. Kelley. "The measurement of overlapping." *Jour. of Educ. Psych.* 10: 1919, p. 229.

when the order comes from above to give forty children to each teacher. Forty children must then be found, and they are found, and distributed with little or no regard for individual differences. Tests standardized on such distributions are, of course, of little or no value in the study of individual differences.

The other field of inquiry, although often confused with the foregoing, is in reality quite different. It concerns itself with the child as an individual, with his conditioned reflexes, and the entire range of his abilities and disabilties. It issues in the psychograph, which shows the abilities present in larger and smaller amounts, and the general average of ability of that particular child. His learning methods and the conditions under which he can learn most rapidly are a part of such studies. Qualitative studies of the onset and course of development of the abilities in infancy and early childhood also belong to this field of inquiry.

Both these groups of workers can and do make important contributions to the growing science of education. One group inevitably offers inspiration to the other, and each sets problems for the other. At the present time, for example, there is no lack of objection from workers in the psychographic field to the wholesale generalizations of the statistical group. Thus Fernberger[3] has said: "Mental tests are so variable within a homogeneous group that differences between two groups do not have statistical significance. Less weight should be given to final scores. The test is a standardized means of having the subject do something so that the trained observer may note his behavior."[4]

H. T. Manuel also warns that large group methods cannot be applied to small groups or individuals. "Education," he says, "can never be accomplished *en masse*, or on the average. It is a personal, individual process. We must be careful not to confuse instruments and methods of scientific research with the instruments and methods of the art of teaching."

Heredity is recognized by other workers as the most important

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[3] S. W. Fernberger. "Statistical and non-statistical interpretation of results." *Psych. Clinic.* 14: 1922, p. 68.

[4] See also H. T. Manuel. "On a certain statistical danger." *Ed. Adm. and Superv.*, 9: 1923, p. 465; and Lightner Witmer. "Intelligence a definition." *Psych. Clinic.* 14: 1922, p. 65; and "The analytical diagnosis," ibid., p. 129.

factor in the differences noted. Thus Thorndike,[5] summarizing the literature in 1913, says: "The wide range of achievements of pupils of roughly the same school training suggests that differences born in them play a large part in determining the differences eventually found in them." Karl Pearson[6] takes the same view of it: "General intelligence and a variety of psychical characters seem unchanged throughout the whole range of school life. *It is therefore not possible for the teacher to change them.*"

Still, the nature of the general intelligence discussed by these writers is vaguely defined. McCall is quoted by Mrs. Hollingworth[7] as follows: "There is an objectively and practically measurable something which constitutes the core of most aptitudes. It is overlaid with various incidental abilities, and furthered or retarded by emotional and physical characteristics of the individual. This something is general intelligence." British and American psychologists have attempted definitions of intelligence and are generally agreed that it is somehow concerned with ability to learn.

It is now held that this general intelligence, this vague something, is inherited, but not as a unit, since the "all or none" principle does not seem to be followed in the inheritance. This general factor seems not to be improvable, according to data gathered with present methods and standardized upon overlapping school grades. The question of the final criterion is an important one. The suggestion that "improvability" be the criterion has been made, and seems likely to be fruitful.[8] The recognition of a "fringe" is still legitimate.

The inheritance of special abilities and disabilities would seem logically to fall in line with the discussions of inheritance of general intelligence. Yet more open-mindedness is apparent in the discussions. Here, again, the differences of point of view regarding the nature of general intelligence confuse the issue. It is difficult to distinguish the special ability in the point of view of Thorndike.[9]

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[5] E. L. Thorndike. *Educational Psychology.* 3: p. 149.

[6] Karl Pearson. *Studies in National Deterioration.* IV.

[7] Leta S. Hollingworth. *Special Abilities and Disabilities.* p. 33.

[8] A. T. Poffenberger: "The influence of the improvement in one simple mental process upon other related processes." *Jour. of Educ. Psych.* 6: 1915, p. 459. Also E. L. Thorndike. "Variability in repetitions of the same task." *Jour. of Exp. Psych.* 6: 1923, p. 161.

[9] E. L. Thorndike. "The reliability and significance of tests of intelligence." *Jour. of Educ. Psych.* 11: 1920, p. 284.

"Intelligence then is not one thing but many. Intelligence measured by one kind of instrument then seems to be something very different from intelligence measured by the other." Numerous studies of the inheritance of special abilities have been made but, because of this confusion, are difficult of interpretation. Arithmetical ability, spelling ability, musical talent, etc., have received attention.

Child studies during the earlier years of life indicate how the original nature is modified by experience and environment. Watson was able to change instinctive fears after a short time. During the earlier years, when the nervous system is most plastic, there appears to be greater possibility of modification. The pre-school child is rapidly coming into his own. Throughout, the view is held that children do not differ in respect to the presence of the ability. All children (at least those over 70 I.Q.) possess each of the abilities in amounts sufficient for satisfactory performance and progress, but the amount of the ability possessed at the time of test differs from child to child.

Children at the time of test may be thought of as having climbed by various amounts along the rise of a learning curve. The test result, so far as it is accurate, indicates the stage the development has now reached. The ability to learn is present in every normal child, by definition. A consideration of opportunities for learning, as a possible cause of the individual differences, is then in order. These opportunities are present to all, in the sense that a river presents an opportunity to swim. But the exhilaration and joy, the increase in confidence and power, are present in varying amounts. Only to the swimmer who takes full advantage of the situation is it a real and present opportunity. If there is no competition, if each one can stay close to shore and employ his feeble and undeveloped efforts regardless of the others, the river may offer to all an equal opportunity, in one sense, but its value, as measured by performance, will be very different in different cases.

Every experiment systematically performed yields some data regarding the modification of abilities by the experiences of home, school, laboratory, or playground. Differences of motor skill, sensory discrimination, perceptual and conceptual abilities, while they must have an inherited basis, become useful when recognized and skilfully employed. Certain principles important for education emerge from all these studies, and may be thus formulated:

1. No group has yet been found in which the individuals composing it possess equal amounts of any one ability.
2. Performances vary so greatly as to indicate that no single requirement is adequate as a stimulus to a majority of the group.
3. To study the development of a learning process it is absurd to set up as a standard a definite quantity of performance and expect each member of the group to accomplish just that amount and no other.

In addition to these inborn differences, the conditions under which children learn produce further differences. Laird[10] has studied the responses of students in the high school to different incentives. Reprimands, sarcasm, ridicule, low grades, extra work, conferences with parents, friendly talks with the pupil, corporal punishment, praise, remission of assignments, honor books, scholarship fraternities—all these have varying influence upon pupils of different natures.

Knowledge of results makes a difference in the performance, and the differences of initial ability seem to be increased rather than decreased by this factor. Arps[11] found it true in the ergograph experiment. L. T. Spencer,[12] repeating Judd's experiments, found increases.

The instructions, or *Aufgabe*, have been recognized as a fruitful source of differences. Thus, Kirkpatrick[13] set two groups at the same task, but with different instructions. One group increased in skill only; the other increased in intelligent reasoning about the activity. Differences in the ability to comprehend, carry in mind, and perform, are known, not only through the directions tests, but as part of the test procedure in nearly all tests.

The general effects of practice, transfer, if at all, in different amounts in different individuals. Poffenberger (*loc. cit.*) found this

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[10] Donald A. Laird. "How the high-school student responds to different incentives to work." *Ped. Sem.* 30: 1923, p. 365.

[11] G. F. Arps. "Work with knowledge of results *versus* work without knowledge of results." *Psych. Rev., Mon. Supp.*, 28: p. 40

[12] L. T. Spencer. "The effect of practice without knowledge of results." *Am. Jour. of Psych.* 34: 1923, p. 107.

[13] E. A. Kirkpatrick. "An experiment in memorizing *versus* incidental learning." *Jour. of Educ. Psych.* 5: 1914, p. 405.

in his experiments. W. H. Winch[14] found that the practice in solving arithmetic problems showed 150 percent improvement, and transferred to logical reasoning, on the average, about 30 percent.

Somewhat akin to the *Aufgabe* as a producer of differences, though more fundamental, since in the experiment it is rightfully assumed to be present, is *"the will to learn."* In the schools the assumption implied is that the child is like an adult, with all the intelligent adult's sense of values and capacity for setting himself at work, as well as devising his own methods of work. Book and Norvell[15] give credit to the interest in improvement and the feel of success in the one particular activity which then engages attention. "Interest in improvement sets up initiating, selecting, and fixating of more efficient methods of control. Without this interest in improvement as such and an exact knowledge of the results, a wrong or inefficient method of response may be formed and practiced until fixed as a set type of reaction to the task imposed. Interest in improvement and belief in its possibility aid mental adaptation and the formation of new and better methods of work." According to the authors, failure of pupils is frequent, if (1) they feel something else is more important, and receive rewards for things other than the one thing on which they are supposed to be at work; if (2) they don't care to put forth the effort, for a variety of reasons; if (3) they don't know how to work or to think up new methods. It should be added that, in the crowded grade, it is the business of no one to see to it that pupils are working at their level of development, or that effective methods are being used. And finally, the child is most certainly not an adult.

The inheritance, modified constantly and in different amounts for different abilities, and from child to child, results in the complex hierarchy of individuality. In respect to the hierarchy of mental traits and the relative amounts of various abilities which operate in a given situation, the methods of partial and multiple correlation have come into more frequent use. Many interrelated factors come into play in the performance of a reading test, and in performing

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[14] W. H. Winch. "The transfer of improvement in reasoning." *Brit. Jour of Psych.* 13: 1922-1923, p. 370.

[15] W. F. Book and Lee Norvell. "The will to learn; an experimental study of incentives." *Ped. Sem.* 29: 1922, p. 305.

an intelligence test of the linguistic type. Wendell White[16] finds that there is a large overlapping, to such an extent as to suggest that perhaps all linguistic intelligence tests should be classified as reading tests. Practice at reading silently affects the Otis Group Intelligence test as follows:

Group	*1st M*	*2nd M*	*Percent Increase*
1	109.96	119.59	8.75
2	72.28	80.93	11.97
3	120.20	137.00	13.98
4	99.38	122.56	23.32
5	96.15	121.15	26.00

Certain abilities which seem not to be contained in the present conventional tests are listed by Haughton[17] as being present in the experiments of Peterson:[18]

1. The ability to attack and solve a problem without getting confused.
2. The ability to give attention longer than is usually required in mental tests.
3. The type of attack made by the subject.
4. The speed of the subject at the type of problem concerned.

Other types of tests and experiments which have been used under varying conditions and with a less degree of standardization are: tests of mental alertness, originality, esthetic appreciation, memory, linguistic organization, creative imagination, riddle-solution; also a qualitative analysis of abilities necessary in scientific thinking and in the study of geometry. How far these types of activity and tests present factors which are not to be found in present intelligence tests, and how far these factors may modify thinking about mental organization, is not yet determined. Such a book as that of Bentley, who definitely recognizes mental organization as a problem, is significant of the new sense of values in this field.

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[16] Wendell White. "The influence of certain exercises in reading on scores in the Otis Group Intelligence Test." *Ed. Adm. and Superv.* 9: 1923, p. 179. E. L. Thorndike. "On the organization of the intellect." *Psych. Rev.* 28: 1921, p. 141. Curt Rosenow. "The analysis of mental functions." *Psych. Rev., Mon. Supp.*, 24: 1917.

[17] B. F. Haughton. "The interrelations of some higher learning processes." *Psych. Rev., Mon. Supp.*, 30: 1921.

[18] Joseph Peterson. "Experiments in rational learning." *Psych. Rev.* 1918, p. 433.

To sum up: Scientific inquiry is proceeding in two overlapping fields, with a variety of methods, the results of which are not clearly interpretable as yet. But the conclusion is certain that individual differences are due in some degree to inheritance and are magnified by experiential modifications and the resulting mental organization. The new science is making steady progress with quantitative methods in dealing with problems of great complexity The development of citizenship must take account of the actual facts in this wide range of raw material, recognizing the fact that children differ in inheritances, general and specific, and in the will to use and further develop the modification of abilities. The first task in intelligent education, then, is to discover the amount of development which has already occurred in any bit of the raw material which is to be transformed into effective citizenship; the second is to discover a means to develop greater ability; and the third is to justify the methods employed by a demonstration of the amount of development actually achieved.

2. Consequent Differences Among Children in School

Superficially, children seem to be alike. Any attempt to determine how far they are alike results at once, as we have seen, in a clear demonstration of the fact that they are not alike in the amount of ability to perform. General intelligence, it is true, is present in all in some amount, but specific abilities are present in an amount which places each child somewhere along the line of a progress curve. But for the comprehension of any particular task or lesson, whether on the playground, in the classroom, at recitation, during the study period, or in the social groupings or competitions, the crucial question is just what amount of general intelligence, or just what amount of the special ability is required. Since the professional aim is the development of that complex of abilities with which directed education is concerned, it is clear that the procedure which ignores the amount of ability actually possessed in a given case fails to begin the task intelligently.

Varying Intelligence Quotients

Data regarding the distribution of general intelligence have been given in various books and articles during the past few years, and

are available to all as standards. The amount of ability present in any classroom in any locality may vary from these standards. The general fact that there are different amounts of general intelligence present in any group becomes apparent from frequent samplings. The specific amounts of abilities present in any group can be known only by repeating the measurements on the group in question.

The establishment of standards of work for the group and for the individuals making up the group can be determined only empirically at present, for the amount and kind of work to suit the level of general intelligence is known only by the successes and failures of the pupils who attempt it.

Since each individual pupil possesses a larger amount of some one ability than of another, it follows that intelligently directed education demands that he work at one level in subject A (which requires the greater amount of ability) and at a lower level in subject B (which requires a less amount of ability). Slowness of comprehension of the concepts and values in geography, for instance, requires greater time, more drill, or clearer illumination of purposes; whereas slowness of comprehension of the concepts and values in literature requires chiefly opportunity to proceed in accordance with the amount of ability already possessed.

Varying Achievement Quotients

The Achievement Quotient (A. Q.) is the ratio between the average score in educational tests and the intelligence score. R. Franzen is credited with the first use of this ratio to indicate the extent to which pupils are working up to their ability levels. It is an average of averages, in a sense, and offers to the school administrator or to the teacher who desires a survey of the general effectiveness of the work over a period of time, an index figure by means of which to compare the development attained, and as a guide to further efforts. However useful this index figure is for this purpose, it obviously fails to convey to the teacher the specific needs of pupils for instruction. The nature of the tests used, since they are aimed at the gathering of an average score, fails to bring out those specific abilities which are strong or weak. The aim of sampling is not the aim of instruction.

Achievement quotients, then, showing as they do, general averages, conceal rather than reveal existing individual differences.

Efficiency Quotients

The efficiency quotient, or educational quotient, may be obtained from one test or by averaging the scores of a number of tests. In any group the spread of scores is wide, indicating a wide range of abilities present in the group. The more definitely the test reveals the operation of one simple mental ability, the more nearly it reveals the amount of ability which it is the business of the educator to develop. On the other hand, the more complex the test and the more mental ability the pupil must employ to meet it, the more the individual variations are concealed. Thus, the composite test in arithmetic, calling for operations in four fundamentals, fractions and decimals, shows the general average of ability to handle the fundamental formal processes, while the test of addition alone shows the amount of ability present in the pupil at that one type of operation.

The accuracy of interpretation of the test for the purpose of improving the abilities which are weak and further strengthening those which are strong will depend not only upon the simplicity of the test, but equally upon a recognition of the limits of the field covered by it. Not infrequently, a test of fundamentals in arithmetic has been called an arithmetic test, and the pupil has been credited with arithmetical ability in accordance with his test score; and similarly, a test of certain abilities in geography, reading, and so forth, has been called a geography test or a reading test; and in each case the pupil has been credited with ability in the whole subject. Promotions have been given on this score that have proved unfortunate, since a short stay in the higher grade showed that the pupil lacked the ability to handle other phases of the subject with equal efficiency.

Our knowledge of the operations or methods which any one pupil has adopted to meet a given type of school situation is as yet fragmentary. The pupil in the earlier stages of addition may surprise the teacher and the tester by solving problems in addition which are beyond his present lessons; yet closer individual inquiry may reveal that he is counting instead of adding. The geometry test which is intended to reveal excellence in reasoning may apparently show a certain amount of such ability while in reality the pupil

may be using memory. Misled by the name given to the test, the teacher may thus arrive at an inaccurate conclusion.

Differences of ability are in reality shown in another way—that is, by the pupil's response to a test which calls in a simple, direct way for the exercise of the specific ability in question, unconfused by any other issue.

Different Pupils Need Different Amounts of Time to Master Any Given Topic

The amount of time required by any particular pupil to master a topic will depend upon the amount of ability, general and specific, that he possesses at that time, and upon the possession of the necessary preliminary information and method. Concepts which are foreign to the pupil's previous experience and training, say in the history lesson, are comprehended with difficulty, while familiarity with the concepts will facilitate comprehension of the whole topic. A variety of psychical characteristics also influence the amount of time required by the given pupil for this topic. There is possibility of a large variation in the pupils of any group with respect to the complexity of detail of the vocabulary. Thus, the pupil who, asked to describe "cow" answered, "A cow is an animal about three inches long and two inches high, usually pink," had sufficient development of the concept to pass a reading lesson, and perhaps even a reading test. But the organization of the concept in relation to beef, hide, shoes, trunks, gelatine, milk, food, shipping or markets, might be required in another lesson. The extent of the organization of the concept, the practice in using the whole concept or some one of its relations, markedly affect the amount of time required in the mastery of a topic.

Differences in pupils are also shown in "conscientiousness." One pupil goes over and over the topic until words and phrases are closely associated with other words and phrases. Another pupil skims the topic and secures certain points he thinks important. The ideal of mastery means different types of mastery to different pupils. Not merely mental alertness, but alertness with reference to different purposes, affects the time required in the mastery of the topic. Thus, the pupil taking the reading test may read the question first, then turn to the paragraph to find the word or words which

give the answer. Another pupil may adopt a different "method of comprehension."

Varying Rates of Progress by the Same Pupil at Different Times

It has been shown by Horn and by Burk that pupils learn more rapidly at one time and less rapidly at another time. Laboratory students in the university are well aware that the state of feeling is not an accurate index to the day's performance. The day after the circus or the day before the circus presents difficulties. A happy experience of the night before may give the pupil an insight or a new incentive or a greater determination or a greater persistency for a time. The advent of spring affects pupils differently and produces differences in the immediate learning rate.

If subject matter were organized in even steps (scaled), it is conceivable that learning might be a smooth unbroken advance; but since topics and exercises differ in complexity, meaning, and application, it follows that there is a larger and more difficult task in mastering certain topics than in others. Moreover, the clarity of the presentation, and the immediate applicability to familiar uses make certain topics easier of comprehension than others, and give an appearance of greater facility of learning at one stage than at another.

Varying Amounts of Drill Needed

Drill, therefore, is most effective when specific to the different needs of the pupils. Routine processes, it is true, are more rapidly picked up by pupils of greater general intelligence, but certain dull ones show similar facility. Thus we have come to recognize a characteristic called "verbal facility," sometimes possessed by backward pupils, who learn the multiplication table, for instance, as a verbal sequence, but show little or no ability in applying the process. Since so much of school education at present depends upon verbal facility, those who possess it have an advantage in the performance of such linguistic activities, at the same time that pupils of really greater general intelligence require more drill to bring their verbal abilities to the same level of performance. Obviously, these pupils with verbal facility but lowered general intelligence, require opportunities for development quite other than the display of their peculiar facility. Much time is wasted by setting drill as a stint for all to perform regardless of the amount of the ability which has already been

developed. The time at which drill is needed, and is therefore most effective, also differs. If the pupil, outside of school, has been drilled in certain abilities and can proceed with his development, there is a waste of his time if this period is taken for drill he does not need.

Different Methods Are Needed by Different Pupils

The term "methods" may refer to teacher methods, or to pupil methods. Teachers who have been trained in one normal school in the year 1900 have been given one method of reading to use for all; teachers trained in another normal school in the year 1920 have been given another method of reading, perhaps to use for all. The thought that each teacher should have at her command a large variety of methods seems worthy of consideration.

Pupils naturally adopt different methods. In a study of arithmetic problems they are differently affected by the size of numbers, the notation in which the numbers are expressed, the complexity of sentence structure, the closeness of association between formal number relations and their applications. Nervousness may become habitual and express itself in various grimaces and random movements with pencil or free hand. Certain pupils try the "stab in the dark" method and await the teacher's pleasure; other pupils try to visualize the stated situation, and still others adopt a reasoning process—"yesterday I did this so-and-so and I'll try the same way today," etc. But is there a "right" method? If there is, what are its characteristics and what is the later significance of the "rightness" of that method? And does this mean the isolation for development of a certain ability which will become integrated in a more complex ability at a later date? Owing to differences of experience which have in the past relieved pupils of embarrassment before the class, at the board, or in private conference, there is a difference of method of attack.

Different Interests and Emotional Reactions

Pupils are differently organized in the amounts of interests and the emotional complexes which are integrated with their activities. But the terms used for the description of these organizations are vague. The interrelations and overlapping of these "fringe" components in the total organization of intelligence must await further research from the quantitative standpoint.

Certain emotional components, however, have been known to influ-

ence the work of the pupil and have been shown to be susceptible of modification. Thus, fears are a persistent source of difference in pupils. Fear of the principal, fear of the teacher, fear of other pupils, fear of arithmetic, fear of long division, fear of ridicule, fear of standing before the class, fear of certain playground activities, these and many other fear complexes characterize and distinguish pupils. The sense of values, of self-reliance, of determination, of liking for teamwork, of enthusiasm for group action, depend to some extent upon the emotional organization. Ask a pupil whether he would rather stand before the class and sing a song, or whether he would prefer to sing as a member of the class, and the eagerness with which he responds will at once distinguish him from others.

Some pupils are consciously afraid of some parts of their work, not so much because of the work itself, as because of the probability that the recitation will yield only criticism and ridicule when their lack of facility of performance is shown. A far greater number is unconscious of the fact that the inability "to make things move" or "to get on with the problem" is an inhibition of the fear type. "I can't" or "I don't know how" is sometimes the pupil's way of saying, "I am perfectly willing to make a huge effort but the pathway of expression seems closed off."

The habit of refusing to make the necessary effort is easily formed. The pupil who "takes to" athletics, where purposes and aims are clearly set up as the first step in learning and where methods may be learned by imitation and varied by initiative, sets up a certain type of organization for solutions, quickly and joyously. This organization may be his one outlet, though this is perhaps rarely the case. Other pupils find inspiration in other types of skilled manual or reading or esthetic interests. The feeling of ease with which this organized mental ability expresses itself may facilitate the development of abilities in related lines and yet may inhibit the development of abilities in other lines. The common factors may be emotional. The general attitude of anticipation of embarrassment or failure will then tend to become habitual and with it the characteristic inhibitions of of effort.

The "will to learn" is present in pupils in different amounts. Time allowed for the development of incentives would well repay the teacher in the saving of time and energy per unit of work. The pu-

pils who approach school tasks with an urge which has its source in home influence, and which is constantly being developed by discussions and applications from the home group, are likely to possess this general emotional attitude in larger amount. The possession of this attitude is not correlated with the economic status of the home, nor even with the well-meant efforts of the parents.

A source of difference of pupils in school is found also in the abilities to make applications. These abilities assume an intellectual ability to seek for, isolate, and clearly envisage an aim or purpose or goal. Certain pupils possess these abilities in considerable amounts, but do not perform so satisfactorily on assigned work, recitations, or other situations where verbal facility carries the pupil through. Occasionally, one finds the pupil who possesses these with other abilities in large amounts and rejoices in the work of such a pupil.

To summarize: Pupils differ in school by reason of the development of their general and special abilities to various points along the rise of a learning curve. This is responsible for idiosyncracies of development of the foundations of apperception and of activity, which in turn put each pupil at a disadvantage and hinder his development in certain abilities which should grow out of the underlying matrix. Therefore, different amounts of time are required by the various pupils for the mastery of topics; different amounts of drill are needed for the development of abilities; different methods are needed by different pupils; and the pupils vary in their response to environmental conditions. Their emotional urge and interest build inhibitions and facilitations which further distinguish them as individuals. These differences should be given the time, effort, and the opportunities for solution which their importance for citizenship demands.

B. Maladjustment of Class Organization to Differences

1. Administrative Organization in Class Promotion

Standardization of administrative organization and procedure is necessary. Among the policies which must be established, and for which someone must be held responsible, is that of the teacher load. Suppose that forty pupils are decided upon as the number of

which each teacher must take charge. Forty pupils must then be distributed to each teacher with the least possible disturbance

Now, the foregoing discussion of individual differences has shown that no group of forty children can be brought together of equal, or even approximately equal ability. Yet this group is to be promoted as a whole in recognition of the work done by the pupils composing it. To be in any sense an adequate recognition of their work, such group promotion must depend upon the way the pupils are selected in the first place. But in actual practice the selection depends upon psychologically irrevelant factors, such as the circumstance that the pupils have some of them been in the school the previous year; or that they are of a certain age, or size, or troublesomeness; or that their parents insist; or the pupils solicit such a placement. The result is inevitably a mixed group, selected not on the basis of the possession of approximately equal amounts of ability to do the required work, but simply in order to complete the required quota.

Even were the group better selected, we must remember that the amount of ability required in a given grade is not known. For a considerable period, the textbook has been the rough and ready guide. Mastery of the textbook has been taken as equivalent to ability, and the rough and ready procedure, recognizing that perfection is unattainable, has set up 70 percent work as a minimum; but the meaning of this 70 percent is undeterminable. The levels of difficulty of work assigned to a grade—other than textbook work, such work for example as sloyd, music, or drawing—are also unknown. The mental picture of a group selected on the basis of criteria so unrelated to any goal, such as citizenship or any other definite goal, resembles nothing so much as a phantom of cubist art.

Under such a system of placement, some 85 to 90 percent of pupils will be promoted, except in the lower first grade and certain departments of the high school. The proportion depends upon the amount of pressure brought to bear upon principal or teacher. Guided by the same uncertain standard, the teacher will say that the group one year is a very bright group; another year that it is a rather slow group. But whatever her opinion, there is pressure from below and vacancies to be filled above, and the pupils, like logs jammed in a stream, must be moved. Forty pupils must again

be found to constitute a full load for the teacher. And with these problems to the fore, no attempt is made to ascertain the actual amount of ability that has been developed during the term. Indeed, no standard has been set up by which it could be determined. When pupils must be promoted, demoted, transferred, and re-grouped for administrative purposes, then, it is impossible, under a group instruction system, to have individual standards; yet any other standards will fail to disclose the progress of the individual.

Again, this 70 percent standard is an unsatisfactory one by which to measure fitness for promotion; for if 70 be understood to mean that percentage of fitness to proceed, it is clear that the pupil is not ready to proceed. If this mark represents an average of the various abilities, then some of them are above 70 percent and some of them are below. It is obvious that great gaps will thus exist in the foundations of such pupils, and each gap will fail to support the greater abilities required for later development. Pupils thus selected for advancement to any grade are unequally prepared to do the work of that grade, and therefore the work presents different degrees of opportunity for development to different pupils. The arrangement prevents many of them from having the opportunities they are currently supposed to have. For, as we have seen, opportunity is rightly measured by the extent to which there is ability to take advantage of it. Exposure to recitations is not, in any adequate sense, opportunity.

Among groups selected by this method, concerted work, except in music and play, is practically unknown. The abilities of the brighter pupils are not evoked by the too-easy tasks; while those of the less developed pupils are further blunted on tasks too hard for their powers. Thus the group work, not properly concerted, hurts all, for the unequal amounts of the several abilities within the individual can be adequately employed only by suiting the task to the level of ability actually attained.

2. Uniform Course of Study

The course of study in the past has been uniform, thanks to manufacturers of textbooks. There are, indeed, courses of study which consist merely of lists of topics from the textbooks showing the number of pages to be covered in a given time. The administration

of the course of study has been uniform also in the sense that every pupil was expected to master the same portion of it, to approximately the same degree of perfection, and in the same time.

With the passing of teacher methods, and the growing recognition that it is *pupil* methods which are of greatest importance, a distinction has been made between subject matter as set down in print and those useful concepts, ideals, and activities which the pupil as an effective citizen is to employ. But whatever the ultimate goals—whether in terms of subject matter or abilities or an abstraction such as 'citizenship' or 'character'—when thought of in relation to pupils and the course of study, they must be divided and subdivided in steps or stages of development. To arrive at the desired end, it is apparent that daily, weekly, monthly progress is by small stages. Further analysis will apportion these elements to various levels of development. The pupil who would arrive at the ultimate goals must have proceeded by small steps, through certain experiences, to the mastery of his own abilities, that they may become his adult habits, attitudes, sense of value, and mental possession.

Various suggestions have been made for changes in the subject matter of the curriculum. One wants more literature, another more science, another more arithmetic, another more hand work, etc. Doubtless the needs of the modern citizen are along lines different from those of a generation ago and therefore the content of the readers must change. But it is worthy of consideration, also, in the light of individual differences of pupils, that the chief urgency at present lies in the direction of changes in the administrative enforcement of the curriculum, such that the pupil may secure what he needs, when he needs it.

The definition of the curriculum in terms of pupil activities will inevitably be an enormously complex statement. The pioneer efforts along this line are already beyond the comprehension of the teacher, yet the field is barely glimpsed. But since no one (least of all the teacher) has ever seen a display of the data on processes which now engage her efforts, and since the statements so far made are a bare beginning of such a display, the magnitude of the task is apparent.

The subject matter of the curriculum, to become effective, must dwell in the pupil's mind in an appropriate setting of motives, incentive, and interest organizations. To follow the course of study,

stated in terms of subject matter without such a setting, is to feed the pupil cold storage meat, and leads to memorization of the subject matter in verbal terms only. To follow the course of study stated in terms of abilities and activities means to vary the quantity of subject matter, to enrich it as needed, to reduce it to bare content when it is of less importance. If we could, by a long stretch of the imagination, conceive of a teacher who alone and on the spur of the moment is able to do this, there might be greater hope of efficacy in the recitation period. It is perhaps more likely that students of the curriculum, and of children, will accumulate large quantities of material to be selected from by the teacher for this purpose.

3. Textbooks Not Adapted to Individual Differences

Recent researches on the content and form of textbooks are illuminating and will undoubtedly continue to point out many changes which may be made in them as source material. The defect that seems to have been most clearly shown in this respect is the constant repetition of the easiest and perhaps least important items. Thus, in certain arithmetics 2+2 appears many times as frequently as 9+7. Vocabularies and sentence structures as well as the relative amounts of space given to topics have also come in for study, and need it.

The textbook is too limited in its scope. Readers are so much alike that it is hardly satisfactory to have supplementary readers. Geographies are notoriously uninteresting and uninforming as regards life interests. Adults prefer railroad folders. There is a world of interesting matter to read about, which unfortunately is not considered reading matter. It has been suggested that this difficulty in the textbooks is due to the experience of publishers who have had to insist that the book fit the ideas and tastes of the teachers, rather than those of the pupils.

In the upper grades and high school it is evident that no one book can contain the discussion of topics which it is desirable for the pupil to study. The need for development of methods of comparison requires that he refer to various authors, and other varieties of evidence. Universities, in certain courses, have adopted the source book as a means of directing pupils' attention to various

treatments. And since comparison is the fundamental process in mental activity, the beginnings of reasoning require some such facility for the younger pupil.

For the development of the tool abilities, the bound book is an inconvenience. The pupil who needs more drill or more time for comprehension of a topic requires alternate materials. Books are not prepared as manuals, nor as exercise books, and for all or nearly all children these are needed. It would be a convenience if subject matter were in exercise form, so organized as to call for the certain abilities which it is desired to develop. Alternative exercises of equivalent difficulty or meaning provide the slower or less developed pupil with requisite material for his work.

As with the curriculum, the most significant need in the grades is for a flexible organization to suit the needs of the pupils. If it were possible to use the textbook five minutes in the case of one pupil and five days in the case of another, this need could perhaps be met. But this question, overwhelming without materials for practice exercises and tests of the immediate material by which pupils can check their own mastery and progress, is more than a textbook problem.

4. Teachers Not Adequately Trained to See and Allow for Individual Differences

We must remember that the teaching body varies in amount of experience and amount and type of training and in individual ability almost as much as the student-body. Each year certain teachers without previous experience are added to the staff. Each year other teachers are retired. Some have been trained to methods of 'soft pedagogy.' Others are martinets. Still others fill pupils with inspiration and ambition. Certain teachers are natural discoverers of talent and special ability. It is, however, only in the last generation that teachers have been included in a scientific program, because of the belief that the problems are so numerous, and variations from the program so frequently necessary in order to meet practical situations, that the teacher could only be provided with the tools and technique for discovering her own solutions.

Such a method ignores the fact that experience may be bad as well as good, and that not always does the number of years of a

teacher's career measure correctly her teaching ability. Neither is the young and recently trained teacher always a mild and adaptable person. Experience, even though uninterpreted, or falsely interpreted, is held to be the best teacher, and teacher training on the job is a rarity. Yet there are teachers in every group, some older and some younger, who are eager to learn, even while they work, methods which will make them effective in directing the growing youth. By reading and study, self-directed, it may be that, in the course of time, the majority of teachers may prepare themselves to discover how far the various abilities of a child have developed, to measure the amounts of growth he makes under direction, and ultimately to set up standards for each child, regardless of the standard of the room in which he sits. Experience alone, without some such training, does not mean that a teacher possesses ability to determine the amount of development that has been achieved and to bring about development where it is lacking.

In order that the teacher may be encouraged to progress in this direction, certain changes will be necessary in the organization of her work. As matters now stand, without these changes, she could do little to suit instruction to individual needs, and it is obvious that her efforts in this direction will lack significanee unless the determinations can be followed by corrective methods of instruction, or modifications of the work. In California, the issuance of a new type of certificate is being tried as an incentive to such study.

5. Class Size Often so Large as to Make Diagnosis and Help Difficult

When the class size is beyond 35, the amount of attention the teacher can give to any one pupil is relatively slight. Up to this number it has been possible for the trained teacher to conduct an 'individual learning' plan of work. Beyond this number, the lecture method and the story-hour, in which the teacher tells the story, has been found most effective in keeping the pupils quiet but the exercise of abilities—and this the growing youth most needs—cannot be developed by the lecture method.

Pupils differ in the amount of time required of the teacher. Certain pupils, if allowed to work uninterruptedly, will forge ahead at a rapid pace; but other pupils need aid—the more, the less developed their abilities. Each pupil will grow at his own rate, relatively to

his development and effort, if permitted to do so. The present methods of class organization prevent growth along some lines in some of the pupils and turn growth in undesirable directions in others.

Too large classes make concerted or social activity impracticable, while in a small group, activity can be organized so as to bring about the development of teamwork qualities. At present, the playground alone offers this opportunity. But children need to learn to work together efficiently and harmoniously at least as much as they need to learn to play together on fair terms; hence, under present conditions—especially the condition of large classes—the pupils fail to achieve a development, of great social importance, which could be brought about, in smaller classes, by concerted action.

To sum up: The primary consideration in schools heretofore has been ease of administration, not efficiency of instruction. Ease in organizing and managing the course of study, ease in handling and directing the use of textbooks, ease in organization of classrooms, have made possible the administration with equal ease of larger and larger classes. The quality of the citizen who is a product of this maladjustment of the schools depends too largely upon influences outside the school, and is not sufficiently influenced by the school training.

C. Evils Resulting from Maladjustment

1. Retardation

The topic of evils is necessarily an unpleasant one, but its discussion may prove valuable if it directs attention to sufferings and inefficiences which can be corrected by cautious but determined thought and action. It is valuable for the school administrator, since it is through the criticisms of his system that he comes to know the temper of the patrons. The problems of retardation, grade repetition, non-promotion and elimination, clogging of classes, grade skipping and evidences of the variation in quality of work are, in general, criteria by means of which he keeps in touch with his own organization. Figures, tables, and discussions of these matters from the administrative point of view have been numerous and the discussions conservatively conducted. School administrators have become familiar with them. From the standpoint of the

smooth-running machine, they are important enough to merit intensive study.

But from the standpoint of the parent or child who is directly affected, there is another aspect of equal importance. And from the standpoint of public welfare, certain interpretations are to be made which vitally affect the administrator quite apart from his own immediate organization.

The age-grade table, for example, is a method of display of facts of age-retardation. It is objective and accurate. Its interpretation, however, is not easy, and its significance unimportant, since neither ages nor grades touch the point of difficulty—except, perhaps, as to school seats. While it has been facetiously remarked that in certain school systems the only standard for promotion is the size of pupils, and that whenever a pupil is too large for his seat in a grade, he should be promoted, yet in sober fact promotion on account of size is seldom resorted to. However, such statistical studies do make it evident that something over 35 percent of the children are educationally retarded, while another 25 percent are accelerated.

These facts of acceleration and retardation create a number of problems. What shall be the curriculum? What shall be the teacher's aim and goal? What shall be the promotion standard?

The present method of handling a mixed group on the same course of study and with the same method of recitation and presentation retards the bright and accelerates the dull, and the damage thus done to their minds, interests, habits, and attitudes is as yet unmeasurable. If character or citizenship or certain specified abilities or the mastery of a certain subject matter is the goal, approximately 70 percent are securing the worst possible training for that end. It cannot satisfy any conscientious teacher to offer one single 'patent medicine' curriculum to all pupils, whether advanced or retarded, with the expectation that in some mysterious way the mere exposure to the curriculum is going to lead the child into habits and knowledge and power—into citizenship or character. Under present conditions, the brighter 35 percent are forming habits of slack, lackadaisical, superficial attention to work, instead of carrying into the schoolroom the vigorous, determined, joyful experience of the playground, the field or the camp. The dull pupils, at the same time, are forming the habit of letting the other fellow do it if the work is

hard, or if some one else wants to do it. Both are being injured mentally and spiritually in growth of habits and attitudes. For the future application of their efforts, the loss to society is incalculable.

Grade repetition is part of the same problem. The financial loss implied in such repetition has often been pointed out, but the financial loss is a paltry item as compared with the later aggregate loss to the commonwealth through unproductive citizenship. Pupils whom their own teacher would not promote, but who are sent up by the principal to make up another teacher's quota; pupils who were promoted by the teacher, but who were held back by the principal to keep the teacher's quota full; pupils who passed in everything except arithmetic; pupils held back for geography; pupils who are shy and diffident and do not impress the teacher—these types of pupils and others are repeating grades. The situation into which they are projected under the method of one recitation for all the group not only complicates the load of the teacher, but holds forth a dreary prospect for the pupil. Another half-year—or perhaps a whole year—to spend on "the same old stuff!" Not because he needs it, not because anyone has given enough attention to him to discover what he needs, but simply because that is the extent to which administrative machinery in a standardized school takes account of the individual's need.

Habits of failure are real habits. The mental organization becomes emotionalized and shows in hesitations, and lack of self-confidence, or in sullenness or bluffing, depending upon the child's general attitudes and sense of values. The brighter child who is learning to work only at easy tasks and who therefore is failing to lay the foundations which will be required for the interpretation and execution of later tasks; and the dull child whose school life has been one succession of vague guesses in the dark in the hope that the teacher will be pleased and pass him over, and who also has failed to lay the foundations for future work, are both headed toward the habit of failure.

Serious studies of this bad habit have shown that it is not a peculiar property of the dull. Rather it seems to be developed along with the knowledge and technique of work. Burnham has shown that mental hygiene and good education occupy overlapping fields. The habit of failure is bad mental hygiene as well as bad education,

and the evil which has been produced by the present methods of school organization points to the necessity for change.

A large non-promotion record is not, as is sometimes supposed, sufficient evidence that high standards are rigidly adhered to; nor is a low non-promotion record sufficient evidence of low standards. So long as "passing the pupil" is a reward given by a pleased teacher instead of the next step in education as determined by the efforts of the pupil himself there will be a wrong direction of the mental attitudes of both pupil and teacher. It takes from the pupil the responsibility for work to be accomplished and turns his attention to the impression to be made on the teacher. This is particularly true in the high school where the pupils have attained the social values and where to-day at promotion time the teacher is besieged by every device which the ingenious mind of adolescent youth can bring to bear.

2. Large School Mortality

Elimination is another phase of school mortality. Tables of figures have appeared frequently, dealing with the age at which children leave school and give up further effort to secure an education. In all such tables there is an apparent tendency to avoid any admission that the chief cause lies in the determination of the pupil to avoid a distressing and to his mind unprofitable expenditure of time. This cause is concealed and yet revealed by all the figures and discussions. For example, in the lower grades, where voluntary action is at a minimum, there is slight elimination, while in the higher grades, with increase of the pupil's freedom to think and act for himself, there is increased elimination. Doubtless there are some instances of necessary departure from school, and undoubtedly a direct inquiry to the pupil will elicit a statement that departure is necessary. But the true question is: would the necessity be overwhelming if the pupil really wanted to remain in school? There is clear indication that many of those who quit to go to work, voluntarily eliminate themselves, preferring the longer hours and harder work, with freedom and association with men, to the schoolroom dominated by a personality which hands out favors for work which the pupil cannot see the value of, and under circumstances which breed the sense of inferiority and failure.

3. Clogging of Classes

Mass instruction is said to be clogged when the group contains a certain number of children who do not enter into the interests and activities of the other children, who therefore feel out of place because of the class feeling prevalent among children, and who acquire an antagonism to the group and its activities and to the teacher. The misfit pupil is frequently out of place on account of misbehavior, as well as age and size. He remains in the group on account of the variety of reasons listed elsewhere. The burden and embarrassment to the teacher under these circumstances is often very great. The principal does not like to take visitors to the room. The younger children frequently make a butt of the older ones. But aside from all this, we have to consider that the older children, themselves, held back with the younger children, are presently (as soon as possible in many cases) going out into the economic and social world as citizens. The question is: how will society benefit most by the present expenditure of their time? Are the schools devoting any great amount of time to giving them the kind of experience and training which will develop to the maximum the abilities they have? What is the most profitable disposal of their time?

The ungraded room, the special class, the "Z" curriculum, are attempts to give to such pupils a real opportunity at the same type of work as is offered to the brighter or young child who is later to go to college. The development of the abilities which the over-age pupil will use, the development of a sense of values for the homely virtues he should practise, the development of the sense of social and civic values with reference to which his vote carries as much weight as that of the merchant prince—are these encouraged by the above devices? It is a question of importance, since it has to do with from 7 percent to 12 percent of the school population. Moreover, this is the group from which repeaters are most frequently drawn, and who thus cause a considerable extra expense.

4. Grade Skipping

Recognition of the needs of a bright and attractive child results occasionally in the extra promotion, causing him to skip that portion of the work assigned to the rest of his class and to miss the beginning work of the next class in order to get one year, or one

grade, ahead of his present status. That he will miss a good deal is obvious, but in general it is felt that what he loses is less than what he gains in stimulus and in the feeling of satisfaction. If the curriculum were scaled in all subjects, and if the pupil's abilities were known to correspond to the amount of skipping, then this might be the correct procedure, facilitating the development of the bright child's abilities.

But this extra promotion is not at present a very common occurrence. Several causes contribute to make it unpopular. There is the trouble of giving adequate reasons for the break in the regular routine, so as to satisfy principal and parent. Moreover, many teachers fail to recognize the superbright child, owing to their habit of thinking of all children as average children; furthermore, every teacher desires earnestly to retain the bright pupils of the room. So much so, that when pressure is brought to bear by parent or by principal, the teacher sometimes argues against losing such children to the teacher of the next higher grade. All these circumstances combine to make the extra promotion at present a comparatively uncommon occurrence.

Leaders of the new movement in education propose to effect, by means of measurements, a considerable increase in the number of such promotions. I believe that not sufficient regard is given to the wide range of abilities which should be exercised in each grade level, and to the wider study of the individual who is to be given the promotion. On the theory just now prevalent that the child who possesses a large amount of one ability, will also possess similar amounts of all other abilities, the only remaining problem would certainly be the determination of the amounts of ability required in the advanced grade. But until more study has been given in the psychographic field to the range of abilities possessed by the child, and until more definite information has been gained regarding the specific abilities which each grade is to develop, it is my conviction that grade skipping is deleterious. For we must remember that the hierarchy of abilities which is forming and becoming facile under the control of familiar situations is the child's most valuable possession. Individuality and general ability are both in the making, and the continuous processes of growth and organization of mind are the result of the situations through which the child is succes-

sively passing. Satisfactory development, then, demands continuity during the earlier stages—continuity, not skipping.

5. Variations in Quality of Work

The apperceptions and appreciations; the habits and attitudes; the criteria of logical, esthetic, and ethical values which are proceeding by stages of growth toward an adult status, are subject to great variations. They show not merely in the speed and accuracy with which routine processes are performed, but also in quality of work. This is dependent on the interest organization, on the feeling of growth and improvement, on the sense of personal importance in the acquisition of new knowledge, and on the forward look toward the time when more significant responsibilities will be carried. The will to learn, the will to exercise ingenuity and initiative, the will to measure up, all inevitably lead to breaking away from a set program. This freedom to grow is far too limited under the repressions of group quiescence where the teacher holds the center of the stage, dictates methods, and determines solutions. In a scientifically organized school system, on the contrary, every process would be carefully designed to encourage this very freedom and range of growth.

To sum up: The more carefully the processes and goals of education are analyzed and made clear, the more the fact appears that individual differences are unavoidable and invaluable. By means of them the public schools should be able to keep up a wholesome supply of the many kinds of persons needed to carry on the complex work of civilization, all of these different individuals with trained abilities in a state of healthy and buoyant readiness to perform their appropriate tasks.

D. Conclusion

The extent of the individual differences among children is just beginning to be realized. They are due in some degree to inheritance and are magnified by differences in experience. The differences are enormously complex. In our schools they make any form of mass instruction inadequate to meet the varying needs and abilities of the children. Children need differing amounts of time and of drill, and different children need different methods.

Schools heretofore have to a large extent ignored these differ-

ences, in an attempt to get simple, uniform organization, courses of study, and textbooks. The schools have therefore failed to exert the influence that they should toward developing good citizenship.

This failure manifests itself in certain bad habits fixed upon the children. These habits include the habit of failure, the habit of half-done work, the habit of work below one's full powers, the habit of shirking. Furthermore, in the economic waste of re-educating repeaters, of holding out of productive activities for one or more years those children whose time is wasted by maladjustment, and in turning out half-educated, those children whose failure has discouraged them from further education effort, the school system itself is displaying not only inefficiency, but bad citizenship.

Individual differences among children, while disturbing to a system of education which tries to ignore them, are potentially the means by which human society may progress.

SECTION II

TYPICAL ATTEMPTS TO ADJUST SCHOOLS TO INDIVIDUAL DIFFERENCES

The individual differences existing among children and the failure of the traditional class method of instruction to make adequate provision for them have been recognized to a greater or less degree for many years. With the spread of the measuring movement, however, the differences have become more obvious and the consequent attempts to adjust the schools to individuals have become more numerous.

These attempts fall under two main heads: (A) attempts to adjust the schools to individual differences while retaining much of the class system organization and method, and (B) attempts involving the definite breaking up of the class organization for individual work in the common essentials.

Typical experiments along both lines are described in this section. We have not tried at all to cover every experiment, but the important types of experiments are outlined as exemplified in various schools and systems.

A. ADJUSTING TO INDIVIDUAL DIFFERENCES WHILE RETAINING THE ORGANIZATION AND THE METHOD OF THE CLASS SYSTEM

I. COACHING LAGGARDS

Even before the days of accurate measurement in education, it was obvious that the schools were failing to adapt themselves to some individuals. These children could not keep pace with the rest of the class—they lagged behind, became discipline problems, clogged classes by repeating grades and were stigmatized as failures. To help these children, John Kennedy, for many years superintendent of schools in Batavia, New York, developed a form of individual instruction about three decades ago. Essentially his plan was a method of coaching and encouraging the laggards; of keeping them up with the rest of the class. An extra teacher was usually assigned to this duty, in each room, the regular class teacher being able, in consequence, to handle large classes.

A modern adaptation of this Batavia Plan is in successful operation at Mt. Vernon, New York. The superintendent there, William H. Holmes, believes in keeping the class organization intact, as John Kennedy used to do at Batavia; and like Kennedy, he provides for the coaching and encouraging of the laggards—not by an extra teacher in each room, however, but by providing an hour each day for individual help by the classroom teacher, and by assigning one or more special teachers in each school to help the laggards who need more help than their own teachers can give them. But let him tell his own story.

An Example from Mount Vernon, New York

By William H. Holmes

Superintendent of Schools

The inspiration for the individualized instruction done in the Mount Vernon schools came through the work of Mr. John Kennedy, former superintendent of schools in Batavia, who was the first educator in the United States to recognize the real need of individualizing school work. He is really the pioneer in emphasizing the im-

portance of diagnosing the needs of the individual pupil.[1] As time goes on, his name will stand out more and more as one of the real discoverers in education.

It is generally admitted that schools become vital only as they become human, and they become human only as they tend to individualize the unit personalities composing them. This process of individualization is, morever, a socializing and co-operative process in which the teacher and the needy child work together in order that in the end the child may better fill his place, first in the school and later in society at large.

The time schedule of the elementary schools of Mount Vernon allows an hour a day in each grade for individualized work, during which time the teacher who has learned how to individualize her teaching may meet and work with children as individuals while the other members of the class are engaged upon profitable class work. Many of the teachers in our schools have learned to use this time to excellent advantage. There are, however, some teachers who for various reasons fail to make good use of this important period. It has been found best, however, not to be over-insistent on the strict use of the individual time on the program of each teacher, for before a teacher can do the right kind of individualized teaching she must believe in it and truly enter into its spirit. In securing the best results in this kind of teaching, the spirit in which the work is done counts more toward success than any other single element. The patience, sympathy, and optimism which constitute the fundamental elements of the spirit of individualized teaching are developed only after the teacher sees the real importance of reaching individual children and has experienced the joy of leading some needy boy or girl from darkness into light.

We have found from experience that it pays to be patient with teachers who have not quickly learned to use the individual periods particularly well, for in many cases, after a longer or shorter time, such teachers have come to see the really great importance of indi-

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[1] Without intending to disparage the contribution of Supt. Kennedy, it may be pointed out that systematic plans for injecting flexibility into the stock grade system had been set forth by Dr. W. T. Harris as early as 1868, and W. J. Shearer, in 1866, and others not long after, had contrived various plans to favor the progress of individual pupils. See the *Twenty-Third Yearbook*.—EDITOR.

vidualized teaching and have come to know how to use the individual time to excellent advantage. To have insisted on having individual work done before the teacher was ready to do it well would have almost certainly resulted in having it done mechanically and without the proper spirit. Furthermore, it would be too much to expect that all teachers, schooled as teachers are in our normal schools and schools of education to look upon teaching largely as a mass process, would quickly see the value of the individualized process of teaching. Some very good class teachers are apparently so constituted that they are not happy in teaching children as individuals. They seem to need a group of children to inspire them. The great majority of teachers, however, while oftentimes slow to grasp the real significance of teaching individuals, come finally to see its true value and learn how to do the work well.

While no specific time has been assigned for individual instruction in the high-school program, high-school teachers have been urged to catch the spirit and master the technique of individualized instruction, and many of the high-school teachers in Mount Vernon are using individualized instruction to the great advantage of their pupils. The high school should be the most fertile field for individualized teaching. The individual adviser at the high school does a large amount of work with individual boys and girls, and it is hoped that through his diagnostic work he will be able to bring to many of the other teachers in the high school the importance of adjusting many pupils to their work in the school through individualized teaching.

In order to do successful individualized work two things are essential: the right spirit and the right method.

The Right Spirit

The right spirit is the motive power that sends the teacher along the way of right method to victory over slow and retarded minds. The essentials of the right spirit are: cheerfulness, sympathy, patience.

A smile on the part of the teacher and a word of approval if the pupil succeeds, and a smile and a word of encouragement if he fails; these things are necessary. An atmosphere of *cheerfulness* must pervade the room if individualized instruction is to succeed.

There must be *sympathy* on the part of the teacher. Sympathy enables the teacher to put herself in the place of the pupil. It sees difficulties as the pupil sees them. It is the power that enables the adult to be a child again and the teacher to assume as many different individualities as she has children under her.

Patience is necessary. For days, weeks, and months sometimes a teacher may work with some backward child with no apparent results in the way of improvement. But patience in the end is sure to win, even though the results be small, comparatively. However for the child who achieves even a little, the victory is usually a great one.

Patience, sympathy, and cheerfulness are essential to the right spirit in giving individualized instruction. Without the spirit which they engender, no teacher can succeed with individual children in large measure.

The Right Method

The right spirit of work must take the right direction or follow the right method with reference to both individual work and class work.

In the preceding paragraphs the aim has been to show that by creating the right atmosphere in the room and the right attitude in herself, the teacher must seek to win the pupil's heart, and through his heart lead him to exert his will; for it is weakness of will rather than weakness of intellect that is the cause of the slow progress of the great majority of backward children. This leads us to the steps in the "Right Method" of individualized instruction.

1. *The pupil is called to the desk.* The teacher calls the pupil needing assistance to her side at the desk.

2. *The teacher works to remove the most elementary difficulty.* In a low voice and with perhaps a pleasant word of encouragement or suggestion the teacher directs the mind of the pupil to the difficulty that is retarding him. This difficulty may be the result of failure to grasp some point that should have been grasped years before. On this point, however far away it may be from the regular class work, the teacher must focus the mind of the child and her powers of teaching. Until these fundamental points are mastered, there can be no true progress. Under the all-class method the teacher rarely

if ever finds out the difficulties that are retarding individual children.

3. *The pupil is made self-helpful.* The teacher leads the pupil to master the difficulties himself, both by not telling him anything that by judicious questioning he can be led to discover for himself, and by not doing the pupil's work for him. The fundamental principle of education is self-activity; the teacher's function is to find out just what the pupil knows and, with this knowledge as a basis, to lead him to see his way and to do the work himself.

4. *It teaches pupils how to study.* Individualized instruction furnishes an opportunity to teach pupils how to study. Many pupils fall behind their classes because they have never been taught to see the difference between the important and the unimportant. Through proper individualized instruction, they can be trained or led to master the printed page.

5. *Individualized instruction should be wholly individual.* Individualized work should be done with one pupil at a time. Group instruction will never enable a teacher to get close to the heart of the child and lead him to reveal himself. Timidity has caused many a pupil to fail. The encouragement and aid that come through individual instruction will make many a timid pupil self-reliant.

6. *The teacher finds the pupils who need individual aid.* During the class recitations the teacher should make note of pupils who seem to fail because they do not understand certain points. At the next individual period, these pupils should be called to the desk for consultation and help. By examinations of the daily written work and of the tests that may be given from time to time, the teacher will be able to find the weak spots that must be strengthened through individualized work. The teacher is to be the judge of who needs aid. She is not to wait for the pupils to ask for aid.

7. *Record of work.* The name of each pupil who receives aid should be recorded in a record book. Such a record will keep the teacher on the right track and will enable her to recall the steps by which she led a retarded mind from darkness into light.

8. *Class work.* During the individual period, the class is engaged upon profitable study work. Individualized instruction offers an opportunity to have real supervised study. The teacher, having given proper directions to the children of the class regarding how to

study, sees during the individual period, that they do study and in case anyone at his own desk seems to need help she can call him to her side at the front of the room and there, in the presence of the class and yet apart from the class, help him with his problem. The teacher also from time to time, when the individual period is from one-half to three-quarters of an hour long, may go around the room to see just what the pupils are doing at their seats.

Special Individualized Work

In addition to the work done by the classroom teacher, there are, in the high school and in all the elementary schools of the city, one or more special individual teachers who do nothing but work with needy pupils, from the several classrooms of the building, whose cases require too extended attention for the classroom teacher to give them the time that they need during the regular school hours.

At the beginning of the year, these teachers work with pupils who have been given what are called "double promotions," in order that they may be adjusted speedily to the grade of work to which they have been promoted. This requires from one or two, up to fifteen or twenty, individual session periods of one-half hour each. During the remainder of the year, these teachers are concerned with cases of children who are out of adjustment because of absence, late entrance, or slow mentality.

One of these special individual teachers works only with pupils who do not know the English language. Such pupils are placed in classes with other pupils of equivalent age, going to the individual teacher for periods of a half hour to an hour each day until they have learned to speak English. The progress of some of these pupils has been remarkable.

What Teachers Think of Individualized Instruction

The following quotations are chosen at random from among many:

"It has given me a better chance to study the individual and to do away with the strained relationship sometimes existing between the pupils and their teachers."

"It helps eliminate the after-school session, creates self-reliance for the timid, and establishes general benefits for all."

"Individual contact with the child opens up better understanding between teacher and pupil, removing shyness on the part of the pupil, giving him confidence in himself during recitation, because he knows that the teacher has a personal interest in him."

One of the new teachers writes: "The time devoted to individual instruction is a credit to this school system. The teacher makes a study of the child and in clearing up his difficulties, leaves him happy and able to work independently."

"The majority of the pupils of my class have voted that individual help periods have made them better students than they otherwise would have been."

"Pupils' conduct improves as they feel friendliness toward the teacher."

"I am able to show children how to study—how to use their books, how to use the appendix, index, etc. I am able to point out to them ways of logical reasoning."

"Great aid to the foreign-speaking children in teaching them English."

"Helps the bright child who is often 'born short' in certain subjects."

"At the beginning of the term, I thought some of our children were helpless in spelling. Through individual help periods, I was able to overcome this difficulty."

"Has been most valuable in improving written composition with the slow pupils."

"My children seem so happy that they are working and accomplishing correct results, which is made possible through individual instruction."

"A splendid opportunity to help the individual that enters late."

Results of the Work

While we have kept no accurate record of the results of individualized instruction, we are convinced that hundreds of pupils each year are able to win success and happiness in school work who, under the ordinary school procedure, would have won only a failure and discouragement.

II. ALLOWING EXTRA TIME FOR LAGGARDS

The Gary Schools, through their platoon organization, have made it possible for children who are slow in any particular subject to increase the time spent on that subject, at the expense of some of their play or shop or assembly activities, or through summer or Saturday work. This is briefly explained by Superintendent Wirt.

Some Features of Time Distribution at Gary, Indiana

By William Wirt

Superintendent of Schools, Gary, Ind.

Children in the schools of Gary, Indiana, are grouped into rapid, average, and slow working classes. This is possible because there are so many classes in each building owing, first, to the practice of having half of the class group reciting while the other half is studying, and second, to the Gary school organization, which increases the capacity of the building approximately 70 percent.

The school classroom day is 420 minutes long, with half the classes in academic work while the other half are in special work. It is posible to substitute a period of academic work for a play period or an auditorium period and thus give more time to a subject or part of a subject. For example, a student in percentage may be given an extra period daily for percentage or a review of common and decimal fractions.

All schools are open Saturday for individual instruction and pupils can elect the work they wish to do. Thus, a child can work three hours Saturday morning in one or several subjects with a teacher in charge for guiding the individual work of the children, but not for holding recitations. Seventy-five percent of the children attend Saturday school and 80 percent of these elect academic studies.

Eighty percent of the children attend summer school for eight weeks and make individual adjustments during this time.

As a rule, classes are not more than ten weeks apart. In many cases, with the help of the Saturday school and extra time in arith-

metic, pupils can advance, at any time of the year, to a higher class group.

I do not consider any of the devices mentioned above as satisfactory, because all merely help to keep the children progressing uniformly in rapid, average, or slow working groups. We do not secure individual instruction and progress except in Saturday schools and here it merely helps to keep the child in harmony with his class group.

Each year the size of the groups is reduced by increasing their number, but Gary is a long way from the one-pupil group.

III. THE INTENSIVE STUDY OF PROBLEM CASES

A scientific variant of the coaching of laggards or the giving extra time to slow pupils, is the intensive study of individuals who meet unusual difficulties, followed by appropriate remedial work. Indeed, this is needed under any plan of individual work, as no system can take care of the real problem cases without scientific diagnosis through intensive personal study. The University of Chicago has occupied a leading position in such individual studies. Dean Gray of that institution illustrates this procedure in the following contribution.

An Illustration from the University of Chicago

By William S. Gray

Dean of the College of Education, University of Chicago

One of the most recently developed methods of providing for individual needs is to make intensive studies of pupils who encounter unusual difficulty and to take the necessary corrective steps or to provide appropriate remedial instruction. One example follows, taken from the field of reading:

> A third-grade boy was unable to make any score on the Gray Oral Reading Test. Since he was suspected of being feeble-minded, he was given the Binet test. This test showed him to be normal mentally, and accordingly, further effort was made to find the cause of his poor reading. His eyes were tested with the letter chart and seemed normal. When questioned, however, he reported that the letters looked as if "someone had put a wet blotter on the book" and blurred them. His eyes were treated and fitted with glasses, and at the close of one year he scored 39 on the Gray Oral Reading Test.[2]

The case which has been described is an excellent example of the fact that many pupils encounter serious personal handicaps which can be discovered only through detailed and somewhat technical studies of their difficulties. Other examples could be given which

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[2] William S. Gray, *Remedial Cases in Reading: Their Diagnosis and Treatment.* Supplementary Educational Monographs, No. 22, p. 15. Chicago: Department of Education, The University of Chicago.

show that many pupils fail for reasons which could be corrected through appropriate instruction. For example, the following causes of difficulty or failure in comprehension in reading were discovered through the intensive study of a number of cases: little or no training in habits of intelligent interpretation; failure to direct attention to the content while reading; an inadequate background of experience; an over-active imagination which resulted in reading into passages things that were not there; lack of interest in reading; inattention; ineffective application. When regular classroom instruction was supplemented for a time by carefully selected practice exercises, most of the pupils in question overcame their difficulties and were able to continue their work more nearly on a basis of equality with the other members of their class.

The statements which have been made concerning failure in reading apply to practically all subjects of the curriculum. There are thousands of boys and girls in school each year who make little or no progress because of inaccuracies and personal handicaps which could be eliminated. These difficulties result in discouragement, retardation, and elimination in far too many cases. "Society recognizes clearly that children differ widely in native endowment and learning capacity; it insists, however, that schools utilize every means possible to provide the most effective instruction for each child." This means that regular class work must be supplemented by systematic detailed studies of the difficulties of each child and that appropriate remedial instruction must be provided.

Only a few examples of such work in school systems can be described here because of the limitations of space. Superintendent C. J. Anderson and Miss Elda Merton[3] have reported a number of intensive studies of reading made at Stoughton, Wisconsin. The initial diagnoses were made through the use of standardized tests. Supplementary information was secured from a study of a child's physical record, home environment, nativity, nurse's report, and records in other studies. When the needs of given pupils were determined, individual help was provided in which the teacher varied the amount and character of the work according to the particular needs of the pupils.

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[3] C. J. Anderson and Elda Merton. "Remedial work in reading." *Elem. Sch. Jour.*, 20 (May-June, 1920), 685-701; 772-791.

Detailed studies in arithmetic, similar to those described in reading, have been made by Uhl[4]. The method employed in these studies was to take to a quiet part of a building, pupils who were failing in the fundamental processes and to make an assignment from the Courtis Practice exercises. As a pupil reported the answers, the teacher directed attention to his methods of work. Many interesting facts were discovered which explained the causes of difficulty and suggested appropriate remedial measures. For example, it was found that some pupils 'broke up' the larger digits in making such combinations as 9+7+5; others employed laborious methods in subtracting and dividing which showed resourcefulness, but which greatly retarded the speed of work.

The value of detailed studies of the types which have been described has been definitely established. The fact is generally admitted that such studies should supplement the regular work of the classroom. One advantage which attaches to this procedure is that appropriate individual help can be given without modifying class organizations. A second, and even greater advantage, is that it usually leads to a clearer insight on the part of the teacher into the specific teaching problems involved.

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[4] W. L. Uhl. "The use of standardized materials in arithmetic for diagnosing pupils' methods of work." *Elem. Sch. Jour.*, 18 (November, 1917), 215-218.

IV. ABILITY-GROUPING

Among the early attempts to adjust schools to individual differences were several plans for dividing classes into ability-groups. Sometimes the groups that were brightest were allowed to complete their school course in a shorter time, as at New Cambridge, North Denver, and Portland, Oregon. In other places, *e. g.*, Santa Barbara, the children all remained in school for the same length of time, but the brighter children had an especially enriched curriculum and the slow ones a curriculum of the bare minimal essentials.

Ability-grouping has recently come into strong favor with many people. Intelligence tests and achievement tests, usually checked by teachers' judgments, have been used to determine the group in which each child belongs. The instruction in each group has then presumably been modified to fit the type of children composing it.

Two modern ability-grouping plans are described below. The one at Detroit is the best known in the country. The one in Los Angeles, while not so extensive, is significant for its success in bringing half of the slow group up to normal in a surprisingly short time.

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1. Ability-Grouping in Detroit Schools

By Stuart A. Courtis

Detroit Teachers College

Detroit has had special classes for atypical children for nearly fifteen years, and under the care of Professor C. Scott Berry, of the University of Michigan and Director of Special Education in the Detroit schools, an administrative department has been gradually developed to deal with the special problems involved. In the department, the operating agency for the study and classification of individual children is the Psychological Clinic. All the mental testing work of the city is carried on under the direction of this Clinic.

With the development of group tests and the growing emphasis upon individual differences, a demand arose for experimental trial of the plan of sectioning on the basis of ability. After suitable preliminary experimentation, the Department met this demand in

September, 1920, by giving the Detroit First-Grade Group Intelligence Test to all children entering the lowest (B1st) grade, about 10,000 in all[5]. On the basis of the scores obtained these children were divided in 'X, Y, Z' groups. The average or normal children, comprising the middle 60 percent of the children in any grade, constitute the 'Y' group. The superior 20 percent and the inferior 20 percent of the children constitute the 'X' and the 'Z' groups, respectively.

In schools where the numbers of children in the different groups warranted it, classes were organized wholly of X, Y, or Z children; in smaller schools class organizations often contain two groups, as X and Y, or Y and Z, depending on the intelligence level of the neighborhood. In the smallest schools the most that could be done was to section into three groups within the class organization for recitation purposes.

From the outset it was realized that no classification by tests could be absolute. Teachers and principals were privileged to change children from one division to another in accordance with their actual success in school work during the first two years. The position of any child in a group, after the very first grouping, is thus determined both by the results of the mental tests and by the teacher's judgment. Actually, it has been found necessary to change the placement of less than 40 percent of the children.

The X—Y—Z plan contemplates a differentiated course of study; the regular course for the Y's, an enriched course for the X's, and a simplified course of minimal essentials for the Z's covering exactly the same ground. Experience has shown that mere change in amount of ground covered is not enough, that the rates of development of the pupils in the different groups vary. For instance, the B4th Z's reach a stage of development in the fourth year of work in reading which is attained by the A2nd X's. Further, there appears to be need for differentiation of teaching methods as well as for differentiated courses of study.

The practice begun in 1920 has been continued ever since. To-day the X—Y—Z classification is in effect through the B5th grade and involves some 80,000 children. Intelligence testing and sectioning

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[5] An account of this work was given by W. K. Layton in the *Twenty-First Yearbook*, Part II.—EDITOR.

on the basis of ability has spread to the intermediate, high schools, and colleges, until to-day the intelligence factor is given consideration in sectioning throughout the system. The degree to which the Clinic is called upon to assist teachers and principals in their attempts to adjust work to the needs of individual children is shown significantly by the data in the following table.

INTELLIGENCE TESTS GIVEN BY OR UNDER THE DIRECTION OF THE PSYCHOLOGICAL CLINIC DURING THE SCHOOL YEAR, 1923-1924

SCHOOL DEPARTMENT	TESTS USED	NUMBER
Kindergarten	Group	387
	Individual*	64
Elementary	Group	59,908
	Individual	3,857
Intermediate	Group	17,531
	Individual	179
High	Group	8,498
	Individual	4
College	Group	416
	Individual	0
Special and miscellaneous	Group	3,421
	Individual	942
Total	Group	90,161
Total	Individual	5,046
Grand Total		95,207

*Binet, Pintner-Patterson, etc.

The educative effect of the tests and studies of the Special Education Department upon the attitude of the teaching corps toward individual differences and the adjustment of school work to individual needs is very far reaching. The Departments of Instruction and Administration have not been able to keep pace with the demands made upon them, particularly in supplying satisfactory differentiated courses of study and practical standards of promotion. To-day, constructive experimental adjustments are under way throughout the system.

Evaluation of the effect of sectioning on the basis of ability has been difficult because of the number of factors influencing test results. Careful experimentation has yielded conflicting data. But in

the informal and more inclusive judgments made by principals and teachers on the basis of experience, the trend of opinion is decisive. Sectioning on the basis of ability increases both the efficiency, and the pleasures of teaching, and is a valuable addition to our grading system because it makes possible a closer adjustment of group work to children's needs.

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2. Ability-Grouping in Los Angeles

By A. H. Sutherland

About 22,000 pupils in the elementary schools of Los Angeles were given group tests consisting of the National Intelligence Test, Thorndike-McCall Reading Test, Woody-McCall Mixed Fundamentals, and a modified form of the Ayres Spelling Test. On the basis of figures so obtained, following McCall, pupils were divided into X, Y, and Z sections. Unfortunately, there were no adequate modifications of the curriculum available with which to follow up the segregations of pupils. The research department was then called upon to apply the methods and materials of the adjustment rooms in order to determine whether the Z groups would profit by their use. The following questions were asked:

1. Would adjustment work materially improve the educational status of the Z-group pupils?

2. How much time would be required to organize a group and train its teacher to carry on the work alone?

3. Would it be possible for the average school counselor to do the necessary analytical testing, organizing, and training?

4. What part of the educational retardation is probably due to wrong education?

After a six weeks' period of two hours' instruction per day, the educational retardation of the Z groups (two) was reduced 32 percent. Among those children retarded three terms or more, the retardation was reduced 55 percent.

It required two hours per day for fifteen consecutive days to give the process placement tests, to organize the groups, to train the teachers and pupils in independent procedure, and to train a teacher

so that she would be able to organize and train another group and its teacher.

The work can be done by any counselor who has had the necessary experience as an adjustment room teacher and who can have the time free two hours a day for fifteen consecutive days.

It was impossible to answer the fourth question at this time since the pupils had not reached a 'saturation point' in the development of their mastery of processes. Most of the children had previously had the benefit of a school which is probably above the average of our city schools. The rapidity of progress of the Z pupils was such as to warrant the opinion that the retardation was due chiefly to wrong education and its resulting psychological complexes (largely emotional in nature). At the end of six weeks 51 percent remained Z pupils of the 4th grade; the remaining 49 percent had become X and Y pupils.

V. DIFFERENTIATED ASSIGNMENTS

Even without ability-grouping it is possible to provide an enriched curriculum for the brighter pupils. This is usually accomplished through a plan of differentiated assignments. The plan may be used in a variety of ways. A student may be given additional credits for doing work beyond the minimal requirements. Or he may have to do some such additional work to get high marks. Or the additional assignments may be made so interesting that he wants to do them of his own volition. Or he may merely be prodded a little to use his surplus time (if he has any) in the doing of extra work in the topic he has completed.

Differentiated assignments are exemplified in two university high schools—the one at the University of Chicago and that at the University of Wisconsin.

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1. Differentiated Requirements in the University of Chicago High School

By W. C. Reavis

University of Chicago High School

The desirability of individualizing instruction is no longer questioned by anyone. The objections to it are concerned chiefly with the applications of the theory to classroom conditions. The question most frequently asked is, How can one instruct children *en masse* and at the same time individualize?

Among the many partial solutions offered to the problem is that of differentiated requirements, or the practice of varying the amount of work to be accomplished in accordance with the ability of the individual pupils of a group. While differentiating the requirements makes possible a high degree of individualization, its successful administration in the classroom presupposes on the part of the teacher (1) knowledge of the educational status of his pupils as individuals, (2) organization of the materials of instruction so as to permit flexible assignments, and (3) the adoption of a technique of instruction which will enable the teacher to use a large share of his teaching time in directing work rather than hearing lessons.

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An attempt has been made in some high schools to encourage capacity work through the awarding of weighted credit for quality or quantity of results. The experiment as a whole has proved disappointing as a constructive solution to the problem of differentiating requirements. It places too much responsibility on the individual pupil for results; it discourages the conscientious slow pupil; and as a penalty or a reward it has proved to be an insufficient stimulus to the pupil of superior powers.

The University High School has encouraged each department to develop an effective technique for differentiating requirements in accordance with its own objectives, particular psychology, and types of teaching technique. As a reward for capacity work of a meritorious sort or as a disapproval for failure to work up to known capacity, descriptive reports are sent to the administrative office for record and then to the parents setting forth the character of the individual's achievement at the time the task is completed.

In language-arts study, in which power in reading is the objective sought, individuals acquire control of the reading adaptation at very different rates, even in groups that are relatively homogeneous in general intelligence. The leading factors which operate in determining the rate of accomplishment are special ability or disability, earnestness of purpose, reaction time, and temperament. Definite amounts of work are laid out for the class as a whole to cover thoroughly within a definite time. Pupils who acquire control over the material required sooner than others are advised to do additional reading from material suggested by the instructor. No additional credit is allowed for additional work, but commendation is given on the basis of the interest displayed and the intellectual independence developed. Pupils who progress more slowly than the majority of the class are advised to report to the after-school remedial class for assistance if further help is needed in the mastery of the minimal requirement.

The materials of instruction in content subjects such as science and the social studies are organized for teaching purposes into large units, or blocks, which require on the average three or four weeks of study. After the pupils are acquainted with the purpose and the scope of a unit, guide sheets are provided which give the minimal essentials in outline form and the text and reference material to be

studied. Supplementary projects for investigation and study are also listed.

The classroom then becomes a workshop in which the instructor is the director. Individual differences soon assert themselves, for pupils assimilate content material at very different rates. Students who acquire an understanding of the essentials rapidly and master their materials without re-teaching and repeating work may complete a unit several days in advance of the majority of the class. Such students undertake supplementary projects from the list provided or of their own selection. The project is usually determined by the intellectual interests which the pupil has developed in his study of the unit. Worthy projects receive commendation, and if in proper written form, may be accessioned and placed in the school library. Unsatisfactory work, on the other hand, must be re-worked until it is in acceptable form. Students who work slowly, and as a result require more time than the average to complete essentials, can report to their instructors for direction and assistance during the after-school periods.

In the department of mathematics the exercises to be done in class are grouped in pedagogical units as assimilative material which embodies the principles or processes to be learned. After teaching a process thoroughly, the pupils are set to work independently by the teacher, and are permitted to advance as individuals to the next point which requires teaching. The superior pupil who is inclined to race over material without acquiring real understanding is required to cover more assimilative material than is the slow deliberate worker who puts more time on details, asks more questions, and as a result obtains a more thorough understanding of the process involved.

The individuals as a group are taught together only when new principles or processes are developed and when common difficulties are encountered. Between such points individuals advance at their own rate, and the instructor assigns to each the amount of assimilative material which in his judgment is needed to insure the understanding desired. The instructor accepts responsibility for the proper and profitable use of the individual pupil's classroom hour. No home assignments are given, but pupils may be asked to come after school for remedial instruction or to re-work material which was done in poor form during the regular class period.

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In the manual arts department instruction is highly individualized. The work of the first course in mechanical drawing, for example, is organized in 14 units. All students are required to take the first ten units. All are required to elect two of the last four units. Students of superior ability are required to take the 14 units, after which they may undertake units in the advanced course and receive credit for the amount of work satisfactorily completed. No attempt is made to hold individuals together for class instruction. Individuals advance from unit to unit, but no one is allowed to begin a new unit until the one on which he is engaged is satisfactorily completed.

The foregoing report of differentiated requirements in four departments of the University High School describes in brief an attempt to put the individual in competition with himself rather than with other individuals. When properly administered, the plan encourages application and tends to develop in the individual a sense of responsibility for carrying on at full capacity whatever he undertakes.

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2. Differentiated Assignments in the Wisconsin High School

By H. L. Miller and S. A. Leonard
University of Wisconsin and Wisconsin High School

The fundamental idea of the experiment in fitting courses of study to individual differences and capacity at the Wisconsin High School was first presented in an article by Professor Miller and Miss Johnson in 1922.[6] The distinctive development has been the building of assignments on various levels of integrating difficulty. This work developed through a vital modification of 're-citation' and emphasis on the idea of mastery of something. First of all in such a scheme are the 'common essentials' in the work of each subject—as sentence recognition and the spelling of a core-vocabulary in English. There must be provision for variety and adequacy of practice to provide for over-learning of these—that is, formation of habits

[6] Miller, H. L. and Johnson, Dorothy. "Directing study for mastery." *The School Review*, 30, No. 10, December, 1922, pp. 777-786.

which are reasonably sure to be retained because the pupil has gone beyond the point of first success and has a margin of mastery.

Mastery, indeed, is the key-note of this procedure, yet a new polarity is sought in initiative, co-operativeness, and creative mastery; attitude and the companionship of the intellectual life are not disregarded. Much of the time saved from formal recitation, for instance, is used in oral reading of literature by teachers or pupils, in free and informal dramatization, in discussion of common experiences in science or history class, and in other community projects. Moreover, the class meets as a unit; hence, when a difficulty met by any one will probably illuminate the problems of others, the teacher calls a group or all the class together, and the problem is worked out. Pupils who have mastered a unit of work are constantly encouraged to turn back and help slower workers. They learn to do this not by telling answers, but by asking questions which lead to solutions, for all know that a mastery which can meet fair and searching tests is the only goal.

A suggestion on mastery is included in the illustrations a little further on.

The natural first mistake in the building of any program of so-called essentials is to pile on far too much. This must be guarded in a properly built system in two ways: First, by requiring full mastery item by item, of 'principles,' it is possible to fit the scheme to the capacity of "the slowest normal diligent pupil," in Dr. Burk's phrase. Second, it is wise to set no arbitrary time-limit, but to revise the minimal requirements on the basis of repeated experiment. Thus, at the end of a grading period of the English job sheet printed below, it was found that three-fourths of the sophomore English class had done six of the nine compositions assigned and that all had done the tested reading and the self-checking form drills. For the purpose of stimulating more diligence, and not as any positive final mark, the slowest fourth of the pupils were given a grade of N. M. (no mastery yet). The job sheet was thus found to be nearly fifty percent too long for the period it had originally been designed for. Most teachers as a first experiment will tend to make the minimal contracts three or four times too long for real mastery.

But covering the basic, or core, assignment means only a passing grade, or a 'fair.' In order to secure marks of 'good' or 'excellent,'

the student must go beyond this unit and do, also with a grade of mastery, additional work of related and significant value. The temptation here is undoubtedly for the teacher to add arbitrarily assignments of dubious value. It is necessary to remember always that, while there are without doubt valuable extra jobs to be done in every subject, pupils should by all means be allowed to specialize in the lines of their interest and talent, and that mere additions of extra work to the common essentials are no gain unless these are clearly significant and related and are, above all, further elaborations of the common principles set forth as a unifying basis of work.

The higher grades earned by doing these "continuing assignments," or "optional contracts," are not merely measures of greater quantity of work done; rather, when the scheme is rightly organized, these additional jobs are different in kind; they should require keener analysis, longer attention, and a wider organizing view over the field of the subject.

Below are reproduced, just as they have been used in classes at the Wisconsin High School, two 'job sheets,' one in geometry and one in English. These are given as very tentative materials. It is to be noted, moreover, that they are not administrable without a considerable amount of work in devising individual tests, and only part of these are yet available. But mastery can be secured on this route, and nothing less should be considered worth attempting. Other experiments of this kind are reported in *Tri-State English Notes* for May and November, 1924. (Volume II, No. 5 and No. 7.)[7]

First 6 weeks. MATHEMATICS 3. (core, Plane Geometry)

F Contract (a) Mastery of Propositions I to XII. It must be an *excellent Fair.* No one is marked 80% or 85% or 70% and the like. You either *do* or you *do not* show capacity in the mastery of this challenge. You either *do* or you *do not* demonstrate these propositions.

(b) You will be able to demonstrate 12 exercises selected out of the first 85 up to the bottom of p. 49. You may select those you desire to prove. I will approve your selection.

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[7] So long as any are available, copies may be obtained from Professor H. Y. Moffett, Department of English, University of Missouri, Columbia, Missouri.

G Contract (a) All of "F" contract above.
(b) You will be able to demonstrate all of the exercises to the bottom of p. 49 and to answer questions on any of them not requiring demonstration.
Your mastery in this contract must be an *excellent good.*

E Contract (a) All of the "F" and "G" contracts above.
(b) You will be able to give a correct demonstration of the first 16 exercises, pp. 273-274.

Note to pupils.

You may win an E+ by doing *very well* your work in the E contract, taking pains to do it neatly, and also assisting all you can in making the class work productive. You can take some pupil who is not getting on well and guide him to better work. If you see any one in the class failing to do his best, you can help by your interest and enthusiasm. All this applies to every one in the class. A G+ is an *excellent* G, you know.

Remember: You will be wise to take out a little insurance. I shall not forget the premium. By doing, for example, more than 12 exercises in Contract F, you will be prepared for accidents in a test or examination. You may go back to the supplementary exercises in Contract G and work on them, and by so doing fortify yourself. Then you know there are exercises not in your textbook. You may bring in new exercises *as you will.* It may be that you will have a *magna cum laude*, or something very fine indeed.

Job Sheet I—ENGLISH III, 1925-1926

(Sophomore)

Those problems marked * you may work on at any time.

1. Essentials:—A grade of *excellent* in all these problems is required for a passing mark.

Themes: for suggestions of subjects see one of the teachers. Acceptable themes—themes which are to make a grade of excellent —must have the following forms absolutely right:

All sentences correctly marked off
All possessives correctly formed
All words on essentials spelling list correct

Themes must, of course, be clearly legible and in decent form.
(See posted manuscript for requirements.)

*1. Two business letters.
One making an inquiry or asking for a catalog, etc.
One ordering two or more articles, stating amounts, form of enclosing money, and payment of shipping expenses
(For correct forms see textbooks on the desk.)

*2. Two friendly letters
One a note of thanks, invitation, or apology
One a letter of a page or more

*3. One oral and one written explanation of a machine or process

*4. One written narrative (story) with some conversation (See suggestions on the bulletin board.)

*5. Three reports on outside reading

*6. All reading in Part I and Part II of *Literature and Life II* except *Silas Marner*

7. 100% in the following tests:
   Sentence Recognition
   Grammatical Correctness
   Plurals
   Possessives
   Essentials (proof-reading)

8. The class median, or better in
   Briggs Dictionary Test
   Thorndike-McCall Reading Test

9. *Excellent* in a grammar test on complex sentences.

II. For a grade of *good* or *excellent*, outside work in each of the following three groups is required:

1. Outside reading reports beyond the minimum in paragraphs 5 and 6.
   Poe's *Tales*
   Hawthorne's *Stories*
   Quentin Durward or another by Scott
   Kipling's stories
   Any of the Library Readings suggested in Part I of *Literature and Life* or other readings approved by your teachers.

2. Any writing on subjects approved by your teachers and organized for this class—letters you have to write, papers in other subjects, translations, etc. *N.B.* Your problem *must* be approved and organized in English class.

3. Reading aloud to the class or reciting verse or prose selections approved by your English teachers.

It is possible that we may eventually, by this procedure, work out six-year courses for the high-school subjects which will be offered for mastery by the better pupils in a minimum of time. Thus, a good worker might succeed in getting done the common essentials of English or "General Language" and foreign languages in five or

even in four years, and then be free for elective work in English or languages or, if he preferred, in fine arts or music or languages. It is perfectly certain that he could in this time fully meet the most exacting college entrance requirements, for example, by well devised individual work. With such a scheme in view the continuing or optional contracts would perhaps be considerably reduced, and major attention given to striding progressively through an adequate mastery of principles. At present, our interest is rather in broadening and illuminating the road as the youngster advances than in stimulating speed. The scheme of individual work lends itself admirably to either idea. At any rate, we can by this method secure mastery of something as we go, and we can keep every pupil who can be reached by any school interest working at his capacity, not idling at the curb while the rest of the ox train catches up with his car.

B. DEFINITE BREAKING UP OF CLASS ORGANIZATION FOR INDIVIDUAL WORK IN THE COMMON ESSENTIALS

All of the plans described so far attempt to adjust schools to individual differences without giving up the traditional class organization. The members of the class manage to keep pace; all go through each grade at the same general rate. The teacher may give explanations to the entire group; the entire group can discuss the work they are doing; there can be the usual study and recitation periods, the annual promotions, the varying marks on report cards, and all the other accompaniments of the traditional system, yet some adaptation to individual differences is made and any of these plans is an improvement on the unmitigated class system.

There are those, however, who feel that the class system itself is a relic of days when accurate measurement was unknown and the great differences among individuals were not yet recognized. These people feel that to retain the class lock-step, no matter how much mitigated, is to impede progress and to fail of complete adaptation of schools to individual needs and abilities.

A number of plans have therefore been devised for making this complete adaptation. These plans provide for individual progress in the mastery of the common essentials, and at the same time allow for discussion and group enterprises for the socializing of the child's life. Each of these plans, like those in the first part of this Section, has been successfully carried out in actual practice.

I. BURK'S INDIVIDUAL SYSTEM

The first voice in America raised loudly in protest against class lock-step methods of teaching and in earnest advocacy of completely individual progress was that of Preston Search, as Superintendent of Schools, in Pueblo, Colorado. Apparently without any special technique, he simply determined that each child should progress at his own rate—and this was done in Pueblo during the years of Search's incumbency, 1888 to 1894. When Search went to Los Angeles for a brief and ill-fated superintendency, he tried to carry out his ideas there; but he was ahead of his time. From then on, his was "the voice of one crying in the wilderness." But few persons did more than bask in his inspiration, then continue in their old ways.

It was Frederic Burk, with the help of Mary Ward, beginning in 1912 and 1913, who really started the present movement to individualize school work. In the elementary school of the San Francisco State Normal School (as it then was) he developed the first definite technique of individual instruction and promotion. His "self-instruction bulletins" spread all over the United States and to many foreign countries until a ruling of the California attorney general stopped their publication. Burk's school was visited by educators from all parts of the world; his "Monograph C," published in 1915, showing the statistical results of two years of individual work, was widely read and reviewed; teachers trained under Burk carried his methods into rural and village schools, and modified the classroom procedure in their city school classes.

Dr. Burk's death while this *Yearbook* was in preparation, prevented his describing his own work. His co-worker from the beginning, however, Mary Ward, and other members of his faculty, have prepared the following description of this pioneer work in completely breaking the class lock-step.

1. Individual System as Developed in the San Francisco State Teachers College

By Mary A. Ward, Grace E. Carter, Hilda M. Holmes and Cecilia Anderson

San Francisco State Teachers College

In 1913, with the co-operation and leadership of the late Dr. Frederic L. Burk, the faculty of the training school department of the San Francisco State Teachers College organized all classes from the kindergarten through the eighth grade so that every pupil had the opportunity of progressing in each school subject as rapidly as his individual ability permitted.

Each of the 700 children enrolled was given a copy of the course of study for each subject on his program of studies. Provision was made for testing and promoting pupils as soon as the work outlined for any grade in any subject was completed. Class recitations were abandoned. No daily assignment was given in any subject. This, in brief, is the essence of the system of instruction which has become known as the "Individual System." The title might well be changed to the "Burk Plan of Individual Instruction," for Dr. Burk was the originator of many of the ideas which have been worked out in a practical way by other educators throughout the country.

For many years previous to 1913 Dr. Burk had been interested in the study of individual differences in children and was a foe to anything that savored of the lock-step in education. His plan of individual instruction originated not as an application of his educational theory, but as a means of meeting the pressing needs and difficulties ever present in a training school operated by student teachers.

The interest and enthusiasm manifested by the pupils working under this system exceeded the expectations of the faculty. Problems of discipline and inertia in regard to progress in school work rapidly disappeared.

The need was soon felt for printed material which would permit a pupil to make progress in his work with little or no assistance from his teacher. The faculty went to work with a will to write textbooks which would be fundamentally self-instructive. After much experimenting and revision, a series of self-instructive bulletins was published in arithmetic, geography, grammar, history,

language, and phonics. Over 100,000 copies of these books were sold without advertising and with no profit to the authors.

As soon as these self-instructive bulletins were in the hands of the pupils, it became possible to keep accurate records of the time each pupil took to complete the work of a grade in any subject. Much care was taken to make these records as accurate as possible. The results of this study were published by Dr. Burk in 1915, in a pamphlet known as "Monograph C."

By 1916, the "Individual System" was emerging from the experimental stage, and many ideas were being tested out which would tend to make the system more applicable to the ordinary classroom conditions, but, as has been said, the California state attorney general ruled that it was not the function of a normal school to publish or sell bulletins similar to our self-instructive bulletins. This ruling effectively curtailed many plans of Dr. Burk and his faculty and made it impossible for the institution to do more than keep alive the fundamental principles upon which the system was founded. Faculty efforts could thenceforth be devoted only toward the development of a technique fitted to the needs of a training department of a normal school.

It was Dr. Burk's opinion that the principles of individual instruction could be made applicable to the public school only when the administrative problems were worked out in a public school system. Two of Dr. Burk's former faculty members, Mr. Carleton Washburne and Mr. Willard Beatty, are doing this in the schools of Winnetka, Illinois.

At the present time, all the grades of the San Francisco State Teachers College from the kindergarten through the eighth grade are operating under the individual system of instruction. While individual progress is provided for in the fundamental subjects, abundant opportunity is afforded for group work.

In the following pages a description is given of the organization of each subject to fit the needs of individual instruction.

Each teacher keeps a record, or an individual progress card, of the promotions of every child in each subject. The following charts give a vivid picture of the variation in progress of a typical primary-grade, and a typical grammar-grade room. A careful study of the age, date of entrance, and grading of each pupil will shed much light upon the advantages of the system of instruction.

PROGRESS CHART ROOM 11 (Primary)

FREDERIC BURK SCHOOL

SAN FRANCISCO STATE TEACHERS' COLLEGE

Names of Pupils	Age in Months	Date of Entrance	Grade When Entering	September 19, 1924								Group in Spelling	Group in Music	Promotions Between 9/19/24 and 10/20/24
				L1	H1	L2	H2	L3	H3	L4	H4			
Florence	115	8/ 5/24	L3				Spell. Writ.	Arith. Lang.	Read.			III	B	Arith. H3 Lang. H3 Spell. L3 Writ. L3
Dolores	114	8/20/23	L2				Spell.	Read. Lang. Writ.	Arith.			III	A	None
Henry P.	110	1/ 3/22	L1		Writ.	Read.	Spell.	Arith.				II	D	Read. H2 Arith. H3
Jean L.	108	10/5/23	L2			Writ.	Spell.	Read. Arith.	Lang.			II	B	Spell. L3 Writ. H2
Thomas	107	8/ 5/24	L3				Writ. Spell.	Read. Lang. Arith.				II	C	Arith. H3 Spell. L3
Virginia	106	8/19/24	L4						Lang. Writ.	Read. Arith.	Geog.	I	B	Writ. L4
Jean A.	103	8/18/24	L4						Arith. Lang.		Read. Writ.	I	B	None
Sam	102	1/22/23	L2				Spell. Writ.	Arith. Read.	Lang.			III	A	Arith. H3
Jack	102	9/ 1/22	L1			Writ.	Read. Spell.	Arith.				II	C	None

Robert C.	101	9/ 5/22	L1		Writ.		Spell.	Arith.	Read. Lang.			II	B	**Arith. H Read. L4**
Henry L.	100	9/ 5/22	L1			Writ.	Spell.	Read. Lang.	Arith.			II	A	None
Libert	99	1/ 4/23	L1		Writ.		Spell.	Read. Arith. Lang.				II	A	Arith. H3 Lang. H3 Writ. H2
Niven	97	8/ 4/24			Read. Writ.		Spell.			Arith.		II	A	Spell. L3 Read. L2
Margaret	96	8/ 8/23	L1		Writ.	Read.	Spell.	Arith.				III	C	Read. H2 Writ. H2
Martha	94	1/ 2/23	L1				Writ.	Spell. Lang.	Arith. Read.			II	A	Lang. H3 Read. L4
Robert M.	93	1/ 2/23	L1		Writ.		Spell.	Read. Arith. Lang.				II	A	Arith. H3
Doris	92	1/ 2/23	L1				Read. Writ. Spell.		Arith.			II	B	Spell. L3 Read. L3 Writ. L3
Sulamith	87	8/ 4/24	L2				Writ.	Arith. Read. Lang.				I	A	Arith. H3 Read. H3
Dale	87	8/ 4/24	L1	Writ.	Read.		Spell. Arith.					II	A	Read. L2 Arith. L3 Writ. H1
Leone	86	1/ 4/23	L1				Writ.	Arith. Lang.	Read.			I	D	Arith. H3

This chart shows differentiation of grades for each pupil in a typical primary room. No pupil is in the same grade in all subjects. An individual record card is kept for each pupil showing dates of promotion, in addition to the above data. For explanations of groupings in spelling see pages 71-72. and for music see pages 74-75.

General Comments on Chart for Room 11

1. Pupils are arranged on chart according to age.

2. The average age for the group is 8 years, 4 months. The pupils are well into third-grade work, which is a little better than a normal rate of progress.

3. Leone, who is the youngest in the group, is doing as well as Florence, who is the oldest. Virginia and Jean A. are the most advanced in the group, but they are not the oldest.

4. The younger pupils are less efficient in writing than the older ones, owing to the fact that they have not been in school as long and also that their muscular co-ordination is not so well developed.

5. Pupils are grouped on a social and age basis, rather than according to grade or intelligence quotient.

6. It will be noticed that Florence and Dolores are now both on high-third-grade arithmetic. This does not mean that they are necessarily doing exactly the same work at the same time. Dolores began the high third on August 4, 1924, while Florence began on October 27, 1924.

7. The chart does not show the group work done in music, drawing, dramatics, story telling, health work, and nature study. An average of an hour per day is devoted to these group activities, while the remainder of the school day, 2½ hours, is devoted to the study of the fundamentals listed on the chart. The length of each study period is suited to the age of the group. Free choice of subject to be studied is allowed each pupil. A recess period of 20 minutes is daily devoted to physical education.

Notes on Individuals in Room 11

The following notes show that in meeting the individual needs of the pupils, advice and co-operation have been sought from the school psychologist, from the health department, and from the home. In fact, anything that may affect a pupil's attitude toward his work is taken into consideration in adapting the program to his needs.

When Florence entered this school August 5, 1924, she was retarded one year. She has already begun to make up her work. It took her 53 days to complete high-second-grade spelling; 31 days to complete low third language, and 58 days to complete low-third arithmetic. In other words, she did this work in about half the time it would have taken her had she been working on a group basis.

Dolores' parents transferred her to this school because she disliked her previous school so much that she would cry and beg to stay at home every morning. She now seems perfectly contented and is making fairly good progress.

Henry P.'s retardation is due to ill health. He has lost as much as three months at a time. However, he has never had to repeat a grade. His progress has merely been slower than that of most pupils.

Robert C. and Henry L. entered school the same day. Their attendance

has been regular, and they are practically the same age. Robert excels Henry, owing partly to a higher mentality and partly to lack of ambition on Henry's part. Had they been attending a school organized on the group basis, they would probably be just beginning the third-grade work and both boys would be expected to do exactly the same amount of work at exactly the same time and at exactly the same rate. A study of the chart shows a marked differentiation in their achievement.

Libert, Martha, Doris, and Leone entered four months later than Robert C. and Henry L. Their work is on about the same level, except that Doris does not read as well as the others.

Niven entered from private school. He is very slow in reading, but excellent in arithmetic. Individual instruction is providing for his case. He has already made a promotion in reading, having completed high-first-grade reading in 46 days.

Margaret is finding reading a little difficult because of her lack of familiarity with the English language. She is learning to read German at home. It has taken her 231 days to complete three half-grades in reading, whereas she completed four half-grades of arithmetic in 127 days.

Sulamith came to this school as a low-second-grade pupil. Inventory tests showed that she was capable of doing more advanced work. She has already made two important promotions. It took her 57 days to complete low-third-grade arithmetic and in 25 days her reading had improved enough to warrant a promotion to high-third-grade reading. On a group basis she would probably be doing only high-second-grade work and would therefore have time to spare to become a discipline problem.

Though Dale is almost 8 years old, she has never been at school before this term, nor has she had any instruction in school subjects at home. She could not even read when she came. Individual instruction is taking care of her case in a way group instruction could never do. Margaret completed low-first-grade reading in 23 days, high-first reading in 25 days, and the entire second-grade arithmetic in 26 days.

Leone has a decided speech defect. However, her progress in the formal work is not impeded, since it does not depend upon recitations before the group. She takes part in group activities freely so long as no one calls attention to her speech. Special help is given to overcome her defect.

PROGRESS CHART ROOM 22 (Grammar Grade)
FREDERIC BURK SCHOOL
SAN FRANCISCO STATE TEACHERS' COLLEGE

Names of Pupils	Age in Months	Date of Entrance	Grade When Entering	Grade if Below H5 in Any Subject.	September 19, 1924							Group in Spelling	Group in Music	Special Subjects	Promotions Between 9/19/24 and 10/20/24
					H5	L6	H6	L7	H7	L8	H8				
Ruth	161	3/11/21	H3		Writ. Q	Arith.	Gram.	Geog.	Hist.		Read. C Writ. S	I	B	Dram. Draw.	Arith. H6
Victor	157	9/ 6/17	L1				Arith. Gram. Writ.		Geog. Hist.		Read.	I	A	Sci. Glee M.T.	Arith. L7 Read.
Jane	154	2/11/19	L2		Spell.		Read. Gram. Geog.	Arith. Hist.	Writ. Q	Writ. S		II	A	Draw. Chem. Music	Geog. L7 Gram. L7 Read. L7
Dorothea	152	12/13/20	L3			Read. Spell.	Hist.	Arith. Gram. Geog.	Writ.			II	A	Dram. Cook. Glee	Read. L7
Cecil	149	1/10/21	H3	Writ. S2 Spell. L4	Read. Writ. Q		Arith. Gram. Hist.	Geog.				III	B	Draw. Music Elec.	Hist. L7 Read. L6
Amelba	148	1/29/18	L1		Spell.	Read.	Gram. Hist. Writ. S	Geog.	Writ. Q			II	A	Draw. Sew. Glee	Gram. L7 Hist. L7 Read. H6
Galen	148	1/27/20		Writ. Q4	Arith.		Gram. Spell.	Geog. Read.	Hist.		Writ. S	II	B	Dram. J.R.C.	Arith. Read. H7
Linda	148	8/18/19	L1	Writ. Q4	Spell.		Arith. Gram. Hist.	Read. Geog.		Writ. S		II	A	Draw. Chem. Music	Read. H7
Clara	147	8/27/24	L7				Spell.	Geog. Gram.	Arith. Hist.	Read.		II	B	Draw. Sci.	Read. H8

Milda	146	2/12/19	L1			Gram.	Read. Hist. Writ. Q	Arith. Geog.	Writ. S			I	B	Sew. J.R.C. Glee	Read. L7
Dorothy	145	3/11/21	H3	Writ. Q4		Arith.	Geog. Gram. Hist.			Writ. S	Read.	I	C	Dram. J.R.C. Glee	Arith. H6 Hist. L7
Eleanor O.	144	1/ 7/19	L1			Spell.	Read. Gram. Writ. Q	Arith. Geog. Hist.			Writ. S	II	B	Sew. J.R.C. Glee	None
Eleanor C.	143	9/ 5/22				Arith.	Hist.	Read. Gram. Geog.			Writ.	I	C	Draw. Sew.	Absent
Charles	140	1/ 3/22	H3		Writ. Q			Arith. Gram. Writ. S	Read. Geog. Hist.			I	B	Draw. M.T.	Arith. H7 Read. L8
Stanton	139	9/ 5/22	H4	Writ. Q3			Read. Gram. Hist.	Arith. Geog.	Writ. S			I	C	Sci. M.T.	None
Grace	139	8/18/19	L1		Writ. Q		Arith. Gram. Hist.	Read. Geog.	Spell.		Writ. S	II	B	Draw. Dram.	None
Lillian	138	1/ 2/19	L1		Spell.		Hist. Arith.	Read. Gram. Geog.			Writ.	II	C	Draw. Cook. Glee	Hist. L7 Read. H7
Pauline	137	9/19/21	H3				Arith. Spell.	Read. Gram. Geog.	Writ. S Hist.		Writ. Q	II	A	Dram. Cook. Glee	Arith. L7 Geog. H7 Gram. H7
Milton	133	1/ 6/20	H1	Writ. S	Spell. Writ. Q	Read. Gram.	Hist.	Arith. Geog.				II	C	Sci. M.T. Gard.	Arith. H7 Hist. L7 Read. H6
George	131	2/ 9/23	L4		Read.		Arith. Gram. Writ.	Geog.	Hist.			I	A	Sci. M.T. J.R.C.	Read. L6 Arith. L7
Frederic	119	1/ 5/20	L1	Writ. 4					Gram. Arith.	Hist.	Read. Geog.	I	D	M.T. Sci.	Returned 10/14/24

This chart shows the differentiation of grades for each pupil in a typical grammar-grade room. No pupil is in the same grade in all subjects. An individual record card is kept for each pupil, showing dates of promotion in addition to the above data. For explanations as to groupings in spelling see pages 71-72 and for music see pages 74-75. The last column shows the special subjects chosen by the pupils. One hour every day is devoted to this work.

General Comments on Chart for Room 22

1. The average age for this group is about 12 years.
2. Frederic is the youngest in the group and the most advanced.
3. The chart shows that most of the group were doing high-sixth- and low-seventh-grade work on September 19, 1924. The promotions listed in the last column show that they are rapidly becoming a low-seventh-grade and high-seventh-grade group.
4. The grouping for each room is made on a social and age basis, rather than on an intellectual or achievement basis.
5. Writing in the grammar grades is graded under two heads, namely, quality and speed. Note the case of Ruth, whose quality in writing is high fifth, but whose speed is high eighth.
6. This group spends 30 minutes a day on music, 20 minutes on physical education, 45 minutes on special subjects, and 40 minutes a week on health work.
7. The formal work in civics is part of the eighth-grade history course.
8. The special subjects for a group of rooms come at the same period each day. Each pupil has absolutely free choice as to the selection of this work. Neither his teachers, his supervisor, nor his parents are allowed to interfere with his choice. If he does not care to choose special work for every day in the week, he may spend that time studying either in his classroom or in the library.

Notes on Individuals in Room 22

The following notes show that in adjusting the school program to meet the ends of each individual we have the co-operation of the school psychologist, the school nurse, and the home.

Ruth's work is the most scattered of the group. She has already completed the requirements for eighth-grade reading. Her sister Dorothy has about the same mentality. They were transferred to this school from another city just after Ruth had had the shock of having failed to make her grade. She has scarcely yet recovered her self-confidence and attacks new material in arithmetic with a fear that she will never be able to do it.

Victor is one of a pair of unlike twins. His brother is superior to him and is now in his second year of the high school. Without this handicap, Victor would probably have done better in school. He has attended long enough to be further advanced. However, he has never had to repeat a grade; his progress has merely been slower than that of most other children.

Dorothea was a very difficult problem when she came, about four years ago. She was absolutely indifferent toward her school work. She was much over-weight. Through the co-operation of the school nurse, the mother was prevailed upon to alter the child's diet. Her attitude toward her work has improved remarkably. From a lazy, self-indulgent child

she has become a studious, thoughtful girl, popular with her classmates and teachers.

Galen is a boy of strong literary and artistic tendencies and has great difficulty with arithmetic. Individual instruction provides very definitely for his case, as shown by the chart.

It is very interesting to note that Linda and Grace started school the same day and have made about the same progress. On the other hand, Lillian, who entered about a half year earlier, owing to slow progress at first, is now about on a level with Linda and Grace.

Clara entered this fall as a low-seventh-grade pupil from a school conducted on a group basis. She has already made promotions in arithmetic, history, and reading.

Though Cecil has a serious health and speech handicap, he has been able to hold his own in most subjects with pupils of his own age. When he entered three years ago, he had never adapted himself to school life. He showed no interest in his work and took no responsibility for his progress. He now has shouldered the responsibility and works entirely on his own initiative.

Lillian's teeth were very bad. They protruded so that they were extremely disfiguring. She was a timid, quiet, little girl, never asserting herself in any way. Her progress in school was slow, though she seemed mentally capable of doing as well as her classmates. She was taken to a dentist and braces were put on her teeth. As her personal appearance improved, there was a change in her whole attitude. She developed self-confidence, and her rate of progress was accelerated until now she is no longer retarded.

George has severe eye trouble and is not allowed to do any reading except what is absolutely necessary at school. Hence his grade for reading is comparatively low. The time that he can spend on reading is given to geography and history. Our system permits steady progress although in this case it is slow, for the efficiency of the pupil is lowered by his physical handicap.

Frederic, who is less than 10 years old, has been out of school while the family was in the Orient. Individual instruction places him in his subjects, regardless of the time spent in school.

A Brief Description of the Organization of Each Subject Under the San Francisco State Teachers College Plan of Individual Work

I. Reading

As a basis for the course of study for individual instruction in first-grade reading, a word count was made from primers and from first and second readers in common use. The word lists for each story in the state primer were divided into two groups—one con-

taining words common to primers, first, and second readers; the other containing words used only in a particular story. The former list is used as a basis for word drill, and complete mastery is expected. Incidental learning is relied upon for the second list.

Differentiation is apparent from the first day. The following figures show the variation in amount of time needed by a group of pupils to complete the state primer: 14, 15, 16, 31, 39, 47, 51, 51, 51, 54, 59, 69, 112 days.

In our individual system of instruction provision is made for each pupil to measure his own progress in reading, to recall temporarily forgotten words by the use of the picture dictionary, and to test himself for speed and comprehension. The standard for passing from one unit of reading to another is the understanding of the story read, rather than a parrot-like repetition of words. There is no oral reading in the usual sense No child is required to listen to another read and explain what he himself has already read.

Each child draws his own books from the school library. He has one book for school reading, accurate account of which is kept by the teacher by an 'O. K.' bookmark system. The 'O. K.'s' are given on ability to tell the story, rather than on ability to read it orally, though some oral reading may be done with only the teacher as an audience. Each pupil has another book, called his "home reader," on which he is tested after he has finished reading it at home. Beginning with the fifth grade, the suggested reading lists are dropped and still wider opportunity is given for individuals to follow their own tastes. In the upper grades most of the reading is now done outside of school, though very accurate account of it is kept by the teacher.

2. Arithmetic

The introductory number work and the work in addition, subtraction, multiplication, and division of integers is given to the pupil in bulletin form. This material is divided into short steps, or goals. Each goal consists of one definite principle to be mastered. Carefully graded explanations of new steps are written in such simple language that a pupil requires a minimum of help from the teacher. Self-corrective tests reveal to the pupil his weakness on any unit of work. Special supplementary exercises are available for drill on each specific difficulty.

The state texts in arithmetic furnish additional material for each grade. Each pupil progresses according to his ability and interest. He gets as much or as little help as he needs from his teacher.

When a pupil can pass a test on all the arithmetic work outlined for a grade, he receives a promotion slip. As shown by records elsewhere, the amount of time taken to complete a grade of work varies with the individual child. The records also show that an individual child may vary in his rate of progress, *i.e.*, he may take longer to complete some grades than others.

3. Spelling

Individual differences in ability to spell are taken care of by the following procedure: a standardized test in spelling is given annually to all children in the school above the second grade. According to the results of this test, the pupils of each class are divided into three groups.

Group I consists of those pupils who seem to learn to spell incidentally. Pupils falling into this group receive no further instruction in spelling. Each year they take the standardized test with the other children. After six years of experimenting, we find that this method of grouping in spelling is quite accurate.

The pupils who fall into Group II are those who can learn to spell through study and find no difficulty in keeping their spelling abreast with their other school subjects.

The pupils of Group III are those who have a great deal of difficulty with spelling—who, even with much effort on their part and on the part of their teachers find it extremely difficult to make the usual progress in spelling.

The pupils of Groups II and III study spelling from their "inventory lists." These lists have been obtained by dictating the entire word list of the grade to which each pupil belongs. Each pupil receives a prepared list of his own misspelled words for study. When he has mastered this list, a new inventory list is made by dictating, without previous study, the words of the next grade.

The pupils of Group II need little or no help in studying spelling, while the pupils of Group III are given much assistance. All known spelling helps are used, but no effort is made to force this group to attain the standards of the other two groups.

4. Primary Language

Since formal language (by which we mean correct forms of written and spoken English) is a matter of habit formation, no pupil is ever considered to have 'completed' the course, though we promote in the subject, as in arithmetic or reading. The course of study in language is planned so that certain specific elements are emphasized in each grade. Weekly tests follow instruction and drill upon these elements. Two perfect tests entitle a pupil to a promotion, but the promotion does not mean that he is through with that particular unit. The promotion is merely a sign of progress. The tests are cumulative and, until a pupil finishes the high-fifth grade, he takes weekly tests on all the units of the course of study so far as he has gone. For instance, a pupil graded 'high fourth' in language and takes weekly tests on the low-third, high-third, and low-fourth elements as well as on the high-fourth-grade elements. His daily drill and practice exercises are determined by his individual errors in the weekly tests.

5. Composition

In composition much emphasis is placed upon individual effort. Practically all written work is individual. Each pupil's writing is largely an expression, in a limited way, of his own interests and inclinations.

Practically all written group work grows out of requests of individuals who wish to participate in the same undertaking. Group work of this type becomes a challenge to both individual and cooperative effort.

The amount of oral work given far exceeds the written, and the child places conscious effort upon his own improvement as well as upon the improvement of the group.

Specifically gifted pupils group themselves into clubs in which they have opportunity for the unfoldment of their special talents.

6. Map Geography

A very definite course in locational geography gives familiarity with names and locations of the places which a pupil meets in the geography reading, which also forms an important part of the

geography work. The reading course consists of books about people of other lands. It is not specifically laid out, but pupils are allowed to follow their interests in choosing from the books on hand.

We recognize the fact that a time comes in each child's life when he shows curiosity about a map. This interest is very often stimulated through outside contacts or through reading. At this point opportunity is seized to teach those locations which form a basis for later work in geography. The work is placed before the pupil in the form of a self-instructive bulletin. Enthusiasm and outside interests affect the time taken to cover this course.

7. History, Civics, Geography

The formal side of the social science subjects is supplemented by a program rich in social and creative activities. A requirement that at least two books and many stereoscope pictures be consulted on each topic studied gives the pupil a wide variety of material as the basis for interesting class programs and discussions. These programs are further enriched by the use of the visual education equipment.

Activities which call for co-operative organized group work are also initiated by individual pupils. This necessitates a group discussion of problems encountered, the writing of letters of invitation and letters of comment or explanation, the drafting of constitutions, by-laws, and other civic documents, and their adoption by the class. The *School News*, edited and published by the pupils, gives wide publicity to these projects. Meeting the present needs of the pupils in this way provides abundant drill on oral and written English and on practical problems in civics.

Under such a program of individual and social living and study, each grammar-grade class becomes a miniature community with many interests involving individuals, groups, subjects, and materials. Opportunity is thus provided for the development of individual qualities of leadership and a rich program of socialization.

8. Penmanship

Group lessons in penmanship are given for such general points as posture, movement, and rhythm. Individual lessons are planned to overcome difficulties in letter formation, slant, alignment, size

of letters, etc. The Starch writing scale furnishes definite goals toward which a pupil works. Tests are given at stated periods or at any time a pupil requests one. Promotions in penmanship are based upon attainments in both speed and accuracy.

10. Dramatics

Opportunity for work in dramatics of a highly social nature is given throughout the school. Below the fifth grade, each room is constantly at work upon the dramatic representation of a story. In the grammar grades there are special classes in dramatics for the children who elect to join them. All the work is of a spontaneous nature; that is, the parts are not memorized. The only exception to this is in the case of the special classes. They occasionally produce a play adhering to the printed form.

11. Music

Entering pupils are tested as to natural voice quality and ability to imitate short rhythmic phrases. They fall into four groups. Group A includes the talented pupils, who begin immediately on regular first-grade work. Groups B, C, and D, are special help groups. The pupils of these groups are promoted as their individual difficulties are corrected.

The second-, third-, and fourth-grade pupils are grouped according to native ability, sight-reading ability, and voice quality. Progress from one group to another is possible. The material used is the state music text.

Since the pupils are segregated into groups according to their musical ability and progress, it is necessary to change rooms for the music lesson. This is called "circling." Four or five rooms have their music lesson at the same period. At a signal, the children march into the hall and "circle" to their music rooms.

The grammar grades also "circle" for music. As in the primary grades, the groups are fluid. A pupil who stands out in a group as a leader, needing little drill, responding before the others have comprehended the problem, is advanced to a group where he will have to work up to his highest capacity. A slow pupil who has reached the limit of his musical ability is placed where he can retain his musical

self-respect. Thus, individual ability and progress are cared for through constant shifting of groups. (See also under "15. Special Music.")

12. Art

The art department works along two lines, group activity and individual instruction. Group activities grow out of the general activities of the children of each room. These projects engage the interest, in one way or another, of all the children in each group. Enough skill is developed to enable the children to draw from objects and to make their own designs and patterns. Children's standards, not those of adults, are used in judging results. Opportunity to do individual creative work is provided for all pupils in all grades. Through special classes, talented children are given unusual opportunities to develop their gifts. (See also under "16. Special Art.")

13. Nature Study

Nature study is one of the subjects which provides for the individual interests of the children. A nature laboratory is maintained to which pupils bring objects of interest and in which they assemble their private collections, care for pets not welcome at home, press plants, mount insects, propagate plants, consult nature books and files, etc. Opportunity for individual work in this subject is provided for all the primary pupils. Pupils above the primary grades may elect to take nature study or some other phase of elementary science as a special subject.

The work of the primary grades has a social phase in that some of the material brought by the pupils is used as a basis for class lessons. In the absence of such material, the teacher provides a subject for discussion.

14. Special Subjects

In addition to the fundamental courses provision is made for classes in which the special interests of the individual pupils are served. Besides those listed below, special classes are provided in cooking, sewing, penmanship, dramatics, travel, and composition.

15. Special Music

Pupils may elect to join the boys' or girls' glee clubs or a class in musical appreciation. These groups are not limited to talented chil-

dren, but they are open to any who wish to join them. The pupils are encouraged to take the initiative in suggesting material and interpretations. They are made to feel that the instructor is there only to help them carry out their own ideas. Local musical events are the basis for many lessons. The 'jazzing' of classics has led to the serious study of many of the original compositions.

16. Special Art

The pupils in the special art classes carry on three types of work. To exercise purely creative power, they choose their favorite subjects and compose pictures or designs from their own mental images. To exercise their power of imagination, they compose designs or pictures, using certain objects as the center of interest. To improve their technique, they occasionally copy a good painting or a line drawing. The teachers, acting as advisers only, help the pupils to keep in mind the principles of good design and color harmony. The designs made are used in craft work, and some of the pictures made are used to decorate the rooms and the halls.

17. Elementary Science

The grammar-grade pupils are permitted to select the type of science work in which they are most interested, whether it be gardening, chemistry of common things, electricity, or advanced nature study. After a few lessons designed to familiarize them with experimental procedure and simple laboratory technique, each individual investigates problems within the field he has chosen. If he has particular experiments in mind, he works at those; otherwise he selects from a prepared list. We do not attempt to measure standards of achievement other than those which should result from a sincere interest on the part of the pupil, since we have as an objective of this elementary science work, attitudes and appreciation, rather than the mastery of an array of scientific facts.

18. Mechanical Construction

The shop is open to boys of any grade who "want to make something." On entering the class with an 'idea,' the boy is told to make a drawing of it. Some of these are very crude, but a few lines

thrown together give the instructor a clearer idea of what the boy has in mind than any amount of verbal or written description. From this crude drawing the boy is taught individually how to make a working drawing to scale. He then begins with the actual construction and gets his knowledge and skill in handling tools and materials through working out his idea.

19. Junior Rotary Club

The Junior Rotary Club was formed to study and give practice in parliamentary law. From this foundation grew an active school citizenship club. Such problems as arise in the cafeteria, in the halls, in the children's library, etc., are brought up for discussion through the medium of parliamentary practice. Committees are then appointed to draw up recommendations to be sent to the faculty, and other committees are appointed to carry out the proposals after their return.

Debating and discussions of current civics problems are other activities of the Junior Rotary Club.

20. Kindergarten

The San Francisco State Teachers College conducts a kindergarten in a foreign quarter of the city. Special attention is given to the development of control of the English language. Each child's language difficulty is diagnosed. Tests are given to discover whether he has the ability to overcome the difficulty. Every opportunity is given to practice the correct sound until the correct habit is established. No formal drills are given but the child works hard to say "Thank you" for his milk, instead of "Dank you," or "Tank you."

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2. Burk's Individual System as Developed at Winnetka

By Carleton W. Washburne

Superintendent of Schools, Winnetka, Illinois

The public schools of Redondo Beach, California, among others bodily took over Burk's methods and materials; so did some

parochial schools. For the most part, however, people failed to see the applicability of Burk's basic principles to city school systems. They assumed that because Burk had adapted these principles to a normal training school, they could not be adapted to other types of schools. It was not until certain public school systems began to take hold of the movement, therefore, that it spread with any rapidity.

The first public school system definitely to undertake this work was that of Winnetka, Illinois. The thousands of visitors to the Winnetka schools, the spread of the Winnetka mimeographed materials and the texts that are just beginning to be published, the lectures given in various parts of the country by members of the Winnetka staff, the articles on the Winnetka schools in professional periodicals, and such lay periodicals as the *Christian Science Monitor, Collier's,* and *The New Republic,* have done much to spread the idea that the class lock-step can be broken in public schools, and that schools can be fitted to individual differences. Summer courses dealing largely or entirely with the Winnetka plan of adapting schools to individual differences have been given in Northwestern University, the University of Chicago, and the University of Oregon. Demonstrations of the Winnetka plan have been given for the summer sessions of Teachers' College, New York; Rutgers College in New Jersey; the College of William and Mary in Virginia; Ohio University at Athens, Ohio; and Normal University in Illinois.

Public schools have recently been experimenting actively along this same line in Bronxville and Dunkirk, New York; in Miami, Florida; in Peru, Indiana; in Racine, Wisconsin; and to a greater or less degree in many other places. The movement seems to be just getting well under way, and bids fair not to stop until all schools make provision for the wide differences that exist among individual children.

Winnetka is a residential suburb of Chicago, with a population of 10,000. The schools have been entirely free from politics for many years and the Board of Education has consistently been composed of intelligent, public spirited men and women. While public affairs are controlled by people of unusual attainments, the school population is sufficiently heterogeneous to be fairly typical of many American communities—there are children from homes of wealth, occasional children from the homes of newly arrived, pov-

erty-stricken immigrants, and many children from simple, comfortable homes. The median intelligence quotient of the Winnetka school children on the National Intelligence Test is 106.65.

The teachers are fairly well paid and are carefully selected. It has been their whole-hearted, clear-headed, co-operative efforts which have made the Winnetka experiment successful.

The technique of individualizing the Winnetka Schools, developed under these favorable conditions, is detailed in Section V, but may be summarized here as follows:

The curriculum is divided into two parts. One part deals with knowledges and skills of which everyone alike needs mastery. The other part provides for each child self-expression and the opportunity to contribute to the group something of his own special interests and abilities.

Under the first head, come the common essentials—the 'three R's' and similar subject matter. Every child needs to know certain elements of arithmetic, needs to be able to read with a certain speed and comprehension, needs to spell certain common words, needs to know something about those persons, places, and events to which reference is constantly made. Since every child needs these things, and since every child differs from others in his ability to grasp them, the time and amount of practice to fit each child's needs must be varied. Under the old régime, in the effort to give different children the same subject matter in the same length of time, the quality of the children's work, the degree of their mastery, varied from poor to excellent, as attested by their report cards. But under the Winnetka technique of individual education, instead of quality varying, time varies: a child may take as much time as he needs to master a unit of work, but master it he must. The common essentials, by definition, are those knowledges and skills needed by everyone; to allow many children, therefore, to pass through school with hazy and inadequate grasp of them, as one must under the class lock-step scheme, is to fail in one of the functions of the school.

The part of the curriculum which should provide self-expression and group activities is quite another matter. Here there is no common skill or knowledge to be mastered. Here each child may legitimately differ from his neighbor in what he gets from school. It is the school's job to provide opportunities for his special interests

and abilities to develop. In this field, education recognizes the importance to evolution of the law of variation, and therefore takes full advantage of children's differences. The children must learn how to make up for their weaknesses by using the strength of others and how to contribute their special abilities to the undertakings of the group.

To provide for both of these main divisions of the curriculum, half the morning and half the afternoon are given over to individual work in the common essentials, while the other half of each session is given to group and creative activities.

During the time devoted to individual work in the common essentials, every child does his own job. If one steps into a "fourth-grade room," for example, he may find each child doing a different thing. One is just finishing third-grade arithmetic, another has begun compound multiplication, another is in the middle of long division, while still another may be beginning fifth-grade work in fractions. A child may be doing fourth-grade arithmetic during one period, but a few minutes later, in the same room, be doing fifth-grade reading.

There are no recitations. Each child prepares a unit of work, checks his results with an answer sheet, and goes on to the next unit. When he has done a small group of units—an amount of work which may have taken him three days or two weeks—he tests himself on this group: if he finds that he has mastered it, that his practice test is 100 percent right, he asks the teacher for a real test. This test the teacher corrects. If it is not 100 percent, the child practices again on the weak points shown by it, then asks for a re-test. When he shows the teacher that the group of units (called a "goal" in Winnetka) is mastered, he works on toward the next goal.

The teacher, under this plan, spends her whole time teaching, not listening to recitations. She helps an individual here or a group there; she encourages and supervises. She is about among the children as they work, not at her desk.

No child ever "fails." Nor does one ever "skip a grade." If in June a child has not finished his grade's work, in September he goes on from where he left off. If a child can do more than a grade's work a

year, he does so—but he does *all* the work, without skipping any. The child is on a piece-work basis, not a time-work basis. He gets the habit of mastering each thing he undertakes.

During the half of the morning and half of the afternoon devoted to group and creative activities, the children are not working toward any set goals, nor are they tested. Going into one of the rooms during this part of the day, one may find the children dramatizing a part of their history work. Perhaps they are putting on a very informal impromptu dramatization, or perhaps they are preparing a more elaborate one which may be presented to the school as a whole during assembly.

The assembly is a sort of open forum. One day it may be a program planned by the children and entirely conducted by them. Another day it may be a business meeting in which all the local school affairs are discussed and worked out by the children themselves. It is interesting to see a third-grade child presiding over an assembly of two or three hundred of her school mates, in good parliamentary form, and entertaining notions regarding such things as whether children should ride their bicycles on the playground or whether snowballing on the playground should be permitted.

Every child in the Winnetka schools has an opportunity to serve on some committee. These committees manage all the student activities. They are usually made up of representatives from each classroom. They are sufficiently numerous to provide a place for every child. In one school, for instance, there is a committee on assembly programs, a committee on care of school grounds, a committee on the care of plants in classrooms, a committee on the toilets, a committee on playground rules, and so on through the gamut of school affairs.

It is during the group and creative activities part of the day that the Winnetka children have their field trips; that one room may entertain another; that creative work is done in art and in shop work, each child making the thing which he himself wishes to make. It is during this part of the day that the children issue their school newspaper, articles to which are contributed by children from the first grade up. The editing, type-setting, proof-reading, and business management of the newspaper are in the hands of the seventh and

eighth grade junior-high-school children, who carry a real commercial account in one of the Winnetka banks, and pay all their bills with checks.

It is during this freer part of the day that children learn how to fit their interests and abilities in with those of others, to co-operate, to participate in the activities of the group. At such times they learn to merge their personal interests in the welfare of the whole, and they learn to contribute their special abilities to this group welfare.

By providing flexibility of time for the mastery of common essentials and by providing opportunity for children to exercise and use their different interests and abilities, the Winnetka schools are adapting the curriculum to the individual differences that exist among children.

II. THE DALTON PLAN

The most widely known form of individual instruction is the Dalton Plan, which was first introduced into a public school system in the high school of Dalton, Massachusetts, a few months after the work in Winnetka was inaugurated. It remained almost unknown in this country until Rosa Bassett put it into the Girls' Secondary School in Streatham, London. This experiment caused an educational furore in England, the reverberation of which woke America up to the experiment Helen Parkhurst had inaugurated in Dalton.

In England, Miss Parkhurst tells us, there are now over 1500 Dalton Plan schools. Miss Parkhurst is also authority for the statement that the Dalton Plan has been adopted as the official method in Holland and in Moscow, that there are Dalton Plan schools in Norway, Germany, Poland, Austria, and Spain, and that 450 public or government schools in Japan (Japanese speaking) are operated on this plan, 250 schools in China, and 50 in India. She definitely knows of 200 in the United States and her book has been translated into 12 languages. All this in about four years!

The fact that the plan does not call for any changes in the curriculum or texts, and yet does much to free the child and individualize his work, probably accounts for its rapid spread. There are those, however, who feel that it is putting new wine in old bottles to adopt the very progressive Dalton Plan while continuing to use traditional curriculum and texts.

To this Miss Parkhurst would probably agree—but the curriculum and texts, she feels, are not her job. She has provided "the vehicle;" it is the task of others to furnish that which is to be carried.

The Dalton Laboratory Plan[1]

By Helen Parkhurst

The Dalton Laboratory Plan is a sociological, rather than a curricular experiment. It aims to socialize the school and keep its life from becoming mechanical. It emphasizes a change in the condi-

[1] Loaned to the *Twenty-Fourth Yearbook*. Copyright reserved.

tions of the *life of the school* instead of concentrating upon the curriculum as do most other educational experiments. The Dalton Plan should be considered a *vehicle for* the curriculum. With it one may use a formal or an informal curriculum. As curriculum is to be thought of as a pupil's 'mental food,' it is understood that one of the determining factors of a pupils' development will be whether or not the curriculum transported by this 'vehicle' satisfies his needs.

To give an understanding of the Dalton Plan, it is necessary for me to state its philosophy and psychology. Briefly, this is to enumerate its principles. In connection with the Dalton Plan, it may be said that these principles are not a result of tardy or recent rationalizing about the plan itself; instead, these principles were laid down at the inception of the plan, and have been carefully followed, and proclaimed as the contribution of the laboratory plan (now Dalton Laboratory Plan) since 1911.

There are but three fundamental principles, viz.—*First, Freedom; Second, Co-operation and Interaction of Group Life, or Community Living;* and *Third, The Proportion of Effort to Attainment, or Budgeting Time.* Principle One is common to many education experiments as a prerequisite and it has had many advocates. By "freedom," I mean freedom to work without interruptions in order to pursue an interest and in order to develop concentration. As applied to an individual, it is understood to mean that he is to be freed from those habits or conditions which enslave his life or impede his complete development.

In the use of Principles Two and Three, the laboratory plan, now known generally as the "Dalton Plan," antedates other educational experiments. These two principles are therefore to be considered as the plan's contribution to educational procedure.

Theoretically, there is "nothing new under the sun;" and practically, the only new thing in the Dalton Plan is its departure from old school practices and the new procedure instituted to introduce the second and third principles into the school.

It may be well to note how the second principle, *i. e.*, the interaction of group life or community living, is brought about. Instead of the usual grade rooms and grade teachers, we have subject laboratories and specialists; instead of confining the pupils of a single

grade to one room, the pupils of four or five grades have access to as many laboratories and are permitted to go from subject laboratory to subject laboratory, *mingling and living,* within the school, while engaged in school pursuits, just as the community outside of school lives and works. It is impossible for an individual pupil, an individual teacher, or an individual class under the Dalton Plan to live independently of others. Here we put in operation Dewey's theory that "A democratic education is not merely to make an individual an intelligent participant in the life of his immediate group, but to bring the various groups into such *constant interaction* that *no individual, no economic group, could* presume to *live independently of others.*"

Every school has a stated amount of time in which to do a given amount of work, and so, in accordance with the third principle (proportion of effort to attainment, or budgeting of time) we map out the work for each class in the form of a job and permit individual pupils to budget the time allotted for a month (laboratory time) according to the demands of their individual needs and difficulties.

Under these principles, the Dalton Plan creates new conditions of school life in which the pupils, to enjoy them, involuntarily function as individual members of a social community. A pupil forms the same kind of relationships in his school life that he will afterwards meet in his business or professional life.

Those who desire to be intelligent about the Dalton Plan must not confuse it with curriculum. Although there appears to be a wide margin between the advocates of individual instruction and the advocates of the project method, both of which groups are conducting worthy experiments in curriculum, neither group will find the Dalton Plan anything but a helpful agent for administering and furthering its ideals or program of work. Consistently, the Dalton Plan has been kept out of the field of curricular debate and confined to experiments in "learning" as based on *the laws of learning.* Investigation shows that excellent results have been achieved in schools that have used the Dalton Plan as a vehicle for the curriculum as administered according to the program based upon methods of individual instruction; and again, in other schools, projects have become the spontaneous expression of the *real living* of children who, under the conditions of the Dalton Plan, arranged their own course,

checked their results, and budgeted their own time with great satisfaction and profit.

The "individual instructionists" find it necessary to supplement their program by adding dramatics, games, etc., in order to safeguard their program from becoming too mechanical; the enthusiasts of the project find their ideal program blocked because at each step they are confronted by the out-of-date school machinery of the average school, and because teachers, while recognizing the value of the new, are handicapped for lack of a school procedure which will permit or encourage any new attempts.

The Dalton Plan does not aim to reconcile these two groups, the "individual instructionists" and "projectionists," because to us they seem sincerely headed in different directions. What the Dalton Plan does aim to do, is to reorganize the *life of the school* and furnish it with a procedure which will be advantageous to either group; permit pupils to enjoy true community life, to build up from day to day the sort of habits which one needs in life outside of school, and to put the child in command of his own resources so that he becomes master instead of servant. Under the Dalton Plan, a pupil can truly become an 'efficiency expert' of his own affairs. The procedure of the Dalton Plan can be used regardless of the curriculum adhered to; it is not a back-door method of forcing 'interesting learning' but a way of permitting the learner to learn.

To institute the Dalton Plan, it is not necessary to banish our system of school grades; there is every opportunity for spontaneous work; there is opportunity for drill at the very moment when it is necessary, either from the teacher's point of view or that of the pupil; pupils are permitted to progress at their own rate of speed in various subjects unhampered within the circumference of the job; and there is true opportunity for all-round *individual development.*

A great Russian actor who lives for the theatre, after visiting a Dalton school a second time, said: "Every laboratory is a theatre and creative energy is continuously freed. This beautiful drama being enacted before our eyes is *life* at its very best."

Under the Dalton Plan, the pupil is given his work in the shape of a series of related jobs. The work of any job is very carefully outlined, sometimes by the teachers, often by the pupils, depending upon the kind of school. Each job corresponds to what can easily be

done within a school month of 20 days. The number of jobs outlined for a school year depends upon the number of months comprising the academic year of the school using the plan. Thus, the number varies from eight to ten jobs.

The Dalton Plan is applicable to any part of the school above, and beginning with, the fourth grade. The fourth grade is taken as a starting point because pupils of that age and of that stage supposedly have the tool subjects sufficiently well in hand to enable them to work independently and easily.

A single job may be the working out of a single idea or each job may be made up of a collection of correlated assignments of work. In a school where, say, five subjects compose the curriculum, if the work is to be arranged in jobs, work would be outlined in advance to cover a 20-day period, and work sheets or procedure sheets (assignments) would be made out to show a pupil how to attack each subject. Individual copies of these work sheets (assignments) would be given to each pupil.

We speak of a "job" as comprising a certain number of "units" of work. A unit of work, in quantity, approximates, or corresponds to, what would usually be assigned for a daily recitation in a subject. Twenty units of work would be outlined for each subject taught. If a grade's curriculum had *five subjects,* then a *job* would comprise 20×5 units, or 100 units of work. A unit of work, *from the pupil's point of view,* is not a set amount to be done in a certain stated amount of time, nor does a unit of history, for instance, equal a unit of music or art. Pupils take as much time as they need out of the entire amount at their disposal, to do any given 20 units of work of an assignment.

Teachers have to be careful not to outline more work for a job than pupils can accomplish in the combined laboratory periods of any given 20-day period, but very slow pupils may take more than 20 days if necessary. To safeguard setting too much work, I suggest a teacher's "time-set," as a gauge.

A morning in a Daltonized school is divided into two short periods and one very long period, viz.: first, an organization period lasting from 15 to 30 minutes; second, a laboratory period from two to three hours, and preferably at the close of the morning, a conference period lasting 30 or 40 minutes.

The Dalton Plan does not prescribe any set amount of time for "laboratory time," but it is suggested that, whenever possible, three fourths of the morning time be made available for this purpose.

Let us say that a school sets aside three hours as laboratory time then, in a school month of 20 days, a pupil's laboratory time would approximate 20×3 hours, or 60 hours. Each pupil, therefore, would have at his disposal 60 hours in which to do his 100 units of work. This 60 hours is budgeted by each pupil to serve his individual needs, and *definite instruction is given as to how to budget time.* If a pupil does the entire job (100 units) in less than 60 hours, he immediately proceeds with the next job. There is no waiting for slower pupils, nor are slow pupils rushed along at an accelerated rate or carried by the momentum of the class, producing inaccurate, slovenly work; nor would a slow pupil have to finish in 20 days. *He may have more time whenever necessary;* nor is a 20-day period supposed to coincide with a series of school or calendar months. A pupil counts "one" as his first work day, and so marks his work graph. "Two" is his second day, etc. Absent days are not counted. We go from 1 to 20, because work is set on a 20-day basis.

If a school desired to devote to English the equivalent of 40 minutes a day as a minimum, then the English teacher, in mapping out his work, would guard against outlining more for 20 days (20 units) than could be done by a slow pupil in 20×40 minutes, or 800 minutes. We go further, for we make weekly divisions. These weekly divisions do not block a pupil's interest or retard his progress; they are psychological divisions rather than actual stop signals; they merely indicate to the pupil that a fourth of any subject of the job is completed and put behind him. In the particular subject mentioned, English, the teacher's "time-set" for a week would be 5×40, or 200 minutes.

A pupil may do all of his work, subject by subject, one subject at a time, or a little of one and much of another. He is free to plan his own time and discover his own better methods of work. The reason for a "time-set" should be made clear. It is to make sure that the job set for 60 hours can be done, by a slow pupil, in that time. I here give a "time-set" for a school with a curriculum comprising five subjects and 60 hours laboratory time.

TIME-SET

Subjects	A Unit Basis 1 day's Work	A Week's Work 5-unit Basis	A Month's Work 20-unit Basis
English	40	200	800
History *	45	225	900
Geography *	45	225	900
Mathematics	30	150	600
Science or Nature Study	20	100	400
A month's job of 5 assignments	180 min., or 3 hrs. daily	900 min., or 15 hrs. a week's basis	3600 min., or 60 hrs.

* Or the Social Sciences.

My personal opinion is that teachers *should not put the "time-set" in the hands of pupils,* for fear that doing so will rob the third principle of the Dalton Plan (budgeting of time) of its function. As a pupil learns to budget his time to better advantage, a job can often be done in less than 60 hours, and a new job be undertaken immediately. This means that a bright pupil will save time on his whole job. Thus, in a year, he can do more than the regular work mapped out for a grade. A pupil might, for instance, be able to do a particular week's work in mathematics in 70 minutes, and, as compared to the time-set, have 80 minutes additional for some difficult subject, like history. He then would be permitted 125 minutes for history if he desired; whereas otherwise he would have been permitted only 45. Time saved on one subject may be used for another subject or used in getting ahead more quickly.

Laboratories, or subject work-shops, are established for each subject, but in the separate laboratories pupils spend only the time necessary to accomplish an assignment of work. Each pupil has a job card to measure his progress; he can see at a glance just where he stands on the whole job. A special pupil time-chart is provided for older pupils so that they can record how they as individuals are using their time.

When the Dalton Plan is applied to an entire school, the high-school subject laboratories are considered as one unit, and the elementary school as another unit. The plan of work, and the organization of the school with its new procedure, in reality extends the province of the junior high school so as to include the fourth grade.

When any division of the school has more than 250 pupils—say, for instance, that the elementary school (IV-VIII) has 1250 pupils—we establish five sets of laboratories for each subject.

To insure community living and mingling, we group pupils according to a cross-section division plan, as is indicated in the accompanying scheme for 1250 pupils.

LABORATORY DISTRIBUTION FOR 1250 PUPILS

Grade	"A" Laboratories	"B" Laboratories	"C" Laboratories	"D" Laboratories	"E" Laboratories
4th	50 Pupils	50 Pupils	50 Pupils	50 Pupils	50 Pupils
5th	50 "	50 "	50 "	50 "	50 "
6th	50 "	50 "	50 "	50 "	50 "
7th	50 "	50 "	50 "	50 "	50 "
8th	50 "	50 "	50 "	50 "	50 "
Total	250 Pupils in Group "A"	250 Pupils in Group "B"	250 Pupils in Group "C"	250 Pupils in Group "D"	250 Pupils in Group "E"

This table indicates that the 1250 elementary pupils, which would ordinarily constitute five 4th grades, five 5th grades, five 6th grades, five 7th grades, and five 8th grades, or 25 grades with 25 teachers, would, under the Dalton Plan, be reclassified so that in each cross-section unit of 250, we should keep for each community group, one 4th grade, one 5th grade, one 6th grade, one 7th grade, and one 8th grade (five grades and five teachers). In order to have pupils going consistently to the same laboratories, we have all of the "A" Group go to "A" Laboratories, "B" Group to "B" Laboratories, etc. There would be five laboratories for each group. In the "A" Group there would be, for instance, an *A* Science or Nature Laboratory, an *A* Mathematics Laboratory, an *A* English Laboratory and either two *A* Social Science Laboratories or an *A* History Laboratory and an *A* Geography Laboratory. Just as five grades in the usual grade school need five teachers, the Dalton Plan would use five teachers for the five laboratories in each unit.

We consider 250 pupils the maximum for a division. Anything below is treated in the same fashion. If, for instance, 250 pupils was the enrollment of the elementary school, there would be five laboratories and five teachers; if 500, there would be 10 with 10 teachers, etc. In my own school, the "Children's University," because we have put art and music and dramatics on the same basis as other sub-

jects, we have nine laboratories, *i. e.*, laboratories for art, music, a theatre, English, science, French, and two for social science (history and geography combined), as well as a library. This, of course, gives a very broad and cultural curriculum.

The pupils remain in grades and have their grade jobs; they go from laboratory to laboratory according to their interests and needs, and without asking permission, during the laboratory time; and they are free to choose and plan within the limits of the job. These jobs depend upon a child's capacity and rank. There is but one restriction to a pupil's freedom. If he does the 20 units of history required by his job, he cannot go on in the subject, history, until he has completed his 20 units of geography, his 20 units of mathematics, etc.—or, in other words, until all of "Job 1" is completed. Then he may proceed with Job II, unhandicapped. This is very important, because an uninstructed pupil cannot wisely organize and budget time. All of a single grade get together with an "Organization Advisor," the same one, at the same time each morning. Pupils report their progress, make their individual time tables for the day, and study the problem of how to reconcile any shortages in their unit scores. A pupil carrying five subjects, has a "work norm" of five units, and should do five units each day. If a pupil fails to get this norm, perhaps when he is doing his most difficult subjects, he is taught to swing into an easier subject next day so that he can do more. This helps him to get ahead or to break even and thus reconcile any shortage.

During laboratory time, pupils are encouraged to work together in grade groups according to the demand or through the medium of the assignment. If, for instance, a fourth-grade pupil entered a laboratory, while there, unless he was confronted with a special piece of work which could only be done by working alone, he must work in that part of the room set aside for his grade. This grouping encourages discussion and debate, and gives a line of direction to conversation which might be promiscuous if the pupils had nothing in common. Before pupils leave a laboratory, they record their progress on their individual job graphs, also on the instructor's graph, which is to be considered a class progress graph. The class progress graphs show an instructor where each individual of a class is in his work at any time.

The last half-hour of the morning (forty minutes in some schools) is designated as "conference time." The pupils who met at "organization time" now meet again for a conference—that is, they confer together over a specified part of the job, according to a posted conference schedule. Monday a grade may meet in geography, Tuesday in history, Wednesday in English, Thursday in science, and Friday in mathematics. During this time, debates, reviews, reports, etc., are given—anything which relates to the subject for which the pupils are called in conference.

These conferences, coming once a week as they do, are not considered as a time for presenting new material. They are too infrequent for that purpose. Presentations of new material are scheduled on a "Presentation Bulletin Board," and are at the call of the teachers, who schedule special calls or classes in accordance with the progress and need of individuals or groups. These appointments are classified and posted under grade headings. They are posted in the morning before the pupils arrive, so that, upon arrival, each pupil makes a daily memorandum of the engagements he is to have with his instructors. He takes these interruptions into account at organization time when planning his day. In this way, a teacher may call together several individuals, or an entire class, as often as necessary, as determined by the need of a subject. Here the only restriction is that there shall be no more than two "special presentation conferences" scheduled for any single grade in the course of a morning, and that the first notice posted shall have preference. This may make it necessary for a second instructor to change the hour of his appointment. Whenever an entire class is called, a sign is put on the laboratory door saying: "This laboratory is closed." All others than the class called are expected to "stay out." This is to avoid interruptions. When small groups are called, the laboratory remains "open" to capacity. To avoid crowding, a capacity limit is set for each laboratory, *i. e.*, a number indicating capacity is posted on the door. If an instructor desires to take some grade on an excursion to a museum or industrial plant, lasting an entire morning, a notice is posted for that grade, telling the time, the meeting place, etc. The instructor puts up the "Closed Laboratory" sign and is off with the pupils.

The plan combines class work, spontaneous group work, and in-

dividual work, but above all it is designed to give pupils a training in handling a job, to teach a pupil to manage time and to plan his work; and at each step of the way take himself and his needs into account in order to assure *individual development* at each point.

Dr. Karl F. Muenzinger of Colorado University, says:

"If, in teaching according to the Dalton Plan, there are to be no more class periods; if the student may spend as much time in the geography laboratory as he pleases before he decides for himself to go to the science laboratory; if he can start this morning with history and to-morrow with French as his interest directs him—where will such unheard of independence get him to? Does not such a plan make study a prey of the variable moods and whims of the youth who should be guided wisely and firmly? This danger is more apparent than real since the Dalton Plan matches such a freedom with a greater definiteness as regards the subject matter than can be found in the usual school curriculum. The 'units' and 'job' of the Dalton Plan remind one very strongly of the task system of scientific management. Just as the industrial engineer has to study and analyze the work and the worker, and construct such tasks as will make 'a good day's work,' so the teacher under the new plan has to study and analyze the subject and student, and prepare 'units,' a required number of which will make a week's or a month's work.

"The definiteness of such a task, or unit, enables the student to envisage his problem, and to know how fast he is progressing in his work. Unlike the worker under scientific management, however, he is not told to do this particular job and no other, but he is allowed to choose which job he may tackle this morning and to solve as much or as little of it as he wants, only—all the jobs for the month must be completed before he can start next month's work. When he starts to work on a chosen subject he has a definite 'set' towards his problem, the importance of which for the learning process cannot be overestimated, and this attitude has been brought about under the best possible conditions. It is not the result of the ringing of a bell and a change of classrooms (how could we ever think this would turn the trick?), but it is the result of the student's own choice, determined by his desires and interests, on the one hand, and his needs as he himself sees them, on the other hand.

"The dangers that might be perceived in such a system of definite tasks (units and jobs) and strong incentives (progress charts) are offset by the freedom in the choice of subjects for a given day. It is in this combination of definiteness and freedom that the strength of the Dalton Plan lies. Under a properly conducted scientific management system, each worker becomes his own efficiency engineer; he studies every factor that influences his production; and he acquires new habits and drops wasteful ones so as to increase his efficiency. Under the Dalton Plan, where free-

dom and definiteness are combined, each student is bound to study his methods and analyze his progress into factors that hinder or further it. He is led to study his own needs and possibilities, and to acquire the habits of work that are adapted to himself as well as to his subjects. May we not expect that he will find out much that will supplement the results of experimental education?"

III. INDIVIDUAL WORK IN THE PRIMARY GRADES: AN ENGLISH EXPERIMENT

Working independently, not knowing of Burk's work or any other American experiments, and beginning in 1919 before the Dalton Plan had been introduced into public schools, Jessie Mackinder has probably gone farther in individualizing the work of beginners in school than has any other person. Space limitations have prevented her from giving more than a glimpse of her work in this *Yearbook;* but fortunately, she has published a complete account of it in book form (see bibliography). The wealth of materials and games prepared by her and the members of her staff have made individual self-instruction possible with big classes (40 to 54) of little children. Hers is one of the most important contributions to fitting public schools to individual children.

Individual Work in an Infants' School

By Jessie Mackinder

Headmistress, Marlborough Infants' School, L.C.C., London, England

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"The Marlborough" London County Council Infants' School is attended by children from homes which vary from those consisting of one room for the entire family to those situated in blocks of workmen's dwellings where three or four rooms are provided for one family. The children's difficulties are created more by poverty of experience than by lack of money.

Children from the poorest or the most overcrowded homes are admitted at three years of age to the nursery class. In this class no instruction in the "three R's" is attempted, but individual work is begun.

The babies are taught to help themselves to any one of the many "games" which are based on sorting by color, shape or size; on pairing, by color, shape; or, in the case of pictures, by examination of the subject.

These "games" are hung round the classroom. The babies may take any one. The rules are: (1) No child may take a game from

another child; (2) The game which is being used by any child must be hung up before that child takes another game.

The babies sit in chairs at small tables which accommodate four children. The teacher passes around showing children how to play the games they have chosen, but she does not, in any way, interfere with their choice.

These occupations interest the three-year-olds for about 1¼ hours in the first part of the forenoon. They then have physical exercises in the playground, when they run races or play follow-the-leader or similar games where each child, though a member of a group, is doing his part as an individual.

The rest of the morning is occupied in class work, such as singing, learning to talk, and rhythmic work.

The afternoon is spent in sleep. Each baby places himself or herself in his cot on entering school and the majority fall asleep within fifteen minutes. They sleep from an hour to an hour and a half. They then fold up their cots and go home.

The children from less crowded homes are admitted to the school when from 4 years, 6 months, to about 5 years, 3 months, of age.

Sense training occupations are provided for these children similar to those described for the babies' use, but these older children are not long attracted by such games.

Letters and a "sound frieze" [9] are provided, by which the children can discover the sounds of the letters of the alphabet. When a child has discovered the sound of a letter, he brings the letter to the teacher, tells her the sound, replaces the letter, and proceeds to discover the sound of another letter.

When this becomes easy to him, he *writes* the letter after he has discovered the sound and says the sound as he points to his own writing. In this grade, then, some children will be seen walking round the room examining the frieze; some will be writing letters on their small boards, in chalk; some will be waiting round the teacher until their turn comes to say the sound just discovered; and some will be using the sense training games.

These individual occupations usually hold the children's interest

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[9] This frieze consists of pictures of common objects, such as apple, boy, cat, dog, etc., with the initial letters, *a*, *b*, *c*, *d*, under each. By naming the picture the child learns the sound of the initial letter.

for about 70 minutes. The remainder of the morning session is spent in group work, such as story telling, singing, ring games, and language lessons.

The afternoons, in this class, are a compromise. Those children who, in the nursery class, formed the sleep habit still wish to sleep. Those children who joined school too late to be placed in the babies' class have a very great objection to lying down, without a job, in the afternoon. So they are allowed to occupy themselves as they wish, either with ordinary toys or the material used in the morning, until they become sleepy. When they wish to sleep, they do so.

One teacher recently joined the staff who thought the learning of sounds of letters was too great a task for children round about 5 years of age, in the afternoons. She locked up the letters in the afternoons and left only the rest of the material available. She was forced to produce the letters because some of her children wept for them and refused to look at anything else.

John is nearly five. He learned all the consonants and the five short vowel sounds in ten days, entirely without help. John is very well developed. Peggy is six months older, but very small. These two sat beside each other. The teacher suggested that now John might write his letters. He said he could not. His teacher said: "What a funny thing! Peggy is much smaller and she *can* write!" John measured Peggy and found her head just reached his shoulder. He sat down and watched her writing. He then wrote the letters she wrote and, without any word, just held up his board for the teacher to see.

John next found three letter nouns, on boards, each one with the picture of the thing named on the back of the board. By saying the sounds of the letters, and looking at the picture on a board, he realized that these three sounds together made the name of the thing pictured. So he learned to 'build' words from sounds, using 50 of these three-letter words for this purpose. The children find out these words, unite them, and say them to the teacher as they did with letters.

The next step is the conquest of the irregular small words so constantly used in the simplest sentences, *e. g., do, so, to, the, are,* and in which the letters have sounds which are not yet familiar to the child.

These tiresome words are written in twos or threes on differently colored cards. The teacher tells the child the words. When he can remember those on the blue card, he may take a red card or a yellow

card. He has a new card just as soon as he memorizes the words on the card in his possession.

His next step is the reading of simple sentences, using the words already learned.

He then may have a reading book. In his book he keeps a card. The teacher writes on the card the number of the first page. The child alone prepares this page for reading alone to the teacher. When he can read that page, it is marked off on his card and he prepares the next page. When he has so prepared and read to his teacher every page of this book, he has a more difficult one wherein he meets the 36 most common phonograms, *ea, oa, er, ir,* etc.

He teaches himself these phonograms (as he taught himself the sounds of letters) by the use of phonogram boards, and works through this second book, keeping his own record of progress, as he did with book one.[10]

In this way he masters the merely *mechanical* art of reading or, rather, of recognizing words. This is not "reading" in the proper sense of that term. Fluency in reading, interest in the subject matter and ability to remember what is read are obtained by the child's reading, independently, and to himself, a large number of very simple story books. Such books are in the classroom for the children's use whenever they wish to do such reading. The class teacher does not hear the children read from these books.

No child receives any teaching in reading along with any other child. He proceeds to the next higher stage when he has completed the work of the previous one.

It often happens that amongst children who started school in the same class and at the same time there are some still learning letter sounds while others are reading simple tales.

The learning of spellings, the construction of sentences and writing answers to questions on information gained by independent reading are all graded, and each grade of work is accomplished by the individual child independently of any other child in the class.

The children learn figures and number groups by identifying given symbols with those on a figure indicator and, from this stage,

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[10] The actual process and apparatus is fully described in *Individual Work in Infants' Schools*, by J. M. Mackinder, published by The Educational Publishing Company, Cardiff, Wales. Price 3/6

proceed from stage to stage of the arithmetic syllabus as they are ready for progress. In arithmetic, the working of a new process with the concrete material is shown to a group of children. They are then left to work many examples until, having grasped the underlying principle, they discard the apparatus in their own time.

There is a time on the time-table of the school marked "Individual Work in the Three R's." During this time the child may work at reading, arithmetic, spelling, composition, or may merely read for the pleasure of reading stories. He is gradually trained to do some work in each subject each morning, but he does work of his own choice. The class teacher keeps a record of his progress from grade to grade, in each subject, and occasionally tests back work.

This individual work goes on from 9 to 10:40 A. M. There is then an interval of 20 minutes for play. From 11:00 to 12:00 the class does group work, in the form of singing lessons, physical exercises, or scripture lessons.

In the afternoons the children from 6 to 7 years of age have individual work from 2:05 to 2:30, whilst the teacher attends to any child who has been passed over in the morning and needs attention. The rest of the afternoon is spent in group handwork, stories, games, or lantern talks on history or geography.

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IV. INDIVIDUAL WORK IN LOS ANGELES

On the opposite side of the world, and beginning a little later than Miss Mackinder, A. H. Sutherland, then Director of the Bureau of Research in the Los Angeles public schools, worked into individual instruction through intensive study of the causes of maladjustment. His materials and methods as applied to adjustment rooms were purely individual. They produced such remarkable results that they were tried in an entire elementary school in Los Angeles. Dr. Sutherland describes here his work in the adjustment rooms, then lets the principal of the Sixty-First Street school tell her own story of the success of his methods in a school full of normal children.

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1. Individual Work in Los Angeles Adjustment Rooms

By A. H. Sutherland

In September, 1917, psychological research work began in the ungraded rooms of Los Angeles. Binet tests were somewhat familiar to the teachers, but the results were often not accepted. Group intelligence and educational tests were practically unknown. The preliminary problem was one of 'selling' the testing and follow-up program. After the tests were given and computed, it was necessary to show that something could be done, by reorganizing old methods or instituting new methods, to enable the child to bring his level of achievement up to that of others of his age and grade.

A division of the general problem seemed advisable. There were, then, the sub-problems of the establishment of a definite purpose for the ungraded room, the establishment of adequate methods of determining the nature of difficulty the child was having, the training of teachers and principals, the reduction of teacher load or the substitution of a different type of load, the specification of just the types of materials to suit particular findings to be used as exercises for self-development on the part of the child, the establishment of standards by which child and teacher should know when the ungraded room had accomplished its purpose, the outlining of definite relations between ungraded room and grades, and the setting up

of administrative relations with the school as a whole and its system of organization and with the curriculum.

Since teachers do not teach by precepts acquired by them in the normal school, but rather—very much rather—by that emotional state which carries them through their conversations outside of school, the value of the preceptual instruction of the normal school has long been held in low esteem. As a means of giving first-hand information to the teacher as to the nature of a child's mental processes with which she was to deal, a number of teachers were urged to enter classes in "Learning." To get the 'feel of learning' is to get something which enables the teacher to put herself in the shoes of the child, and evaluate a task from his standpoint. Teachers uniformly believed in the courses given and found them helpful. Courses in the technique of giving tests, with the understanding that a test is a cross section of some learning process, were also eagerly sought.

The make-up of materials to enable the teacher to help the child increase that particular ability which seemed to be underdeveloped required a study of the present curriculum. The question undertaken was not: "How shall we make an ideal curriculum?" but rather: "How can we prepare a curriculum which will most rapidly and most successfully enable a child to fit into the school system?"

The purpose of the ungraded room was held to be "mental hygiene." The child was to go into such a room for a definite educational purpose, remain there until the purpose was accomplished, and immediately be transferred again to his regular grade. The child's need was to be determined by standardized tests. It was also necessary to distinguish between "recoverable" and "irrecoverable" cases, *i. e.*, between normal and feeble-minded.

The teacher's load was reduced; first, by preparing the materials for her so that night work and after-school work was reduced to a minimum; and second, by reducing the spread of pupils by selecting for "Upper Adjustment" rooms those pupils who needed help in work of the fourth- to the sixth-grade levels; and for "Primary Adjustment" rooms those pupils needing work of the first- to the third-grade levels.

Tests were worked out to cover the practice materials and the mental abilities which are required to handle those materials. These

are unstandardized and have constantly been changed by vote of the teachers as they follow their pupils who have been transferred back to a grade. These tests are beyond the level of difficulty which the pupil of the corresponding grade can successfully pass. Tentative efforts to standardize them have shown that less than five percent can make a creditable record. Yet every pupil in an adjustment room must pass those tests in order to work his way out of the adjustment room into the grade.

The administrative relations have been somewhat difficult to work out, since so many principals find little time in which to examine individual children. It is easier to read their transfer cards and dispose of each case by 'shooing' him into a grade seat. With the growth of the counselor movement, however, this difficulty has partially been solved in schools that can be reached by counselor service.[11]

The result of the general program has been the establishment of a large number of special rooms through which the pupils flow in a constant stream and in which they work out their own difficulties before returning to their grades. In response to a persistent demand, the same method of handling pupils has been applied to one entire elementary school which is described in what follows.

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2. Individual Work in the Sixty-First Street School

By Mrs. Margaret Smith

Principal of the Sixty-First Street School, Los Angeles, California

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The individual education method was introduced into the regular classrooms in November, 1921. About 350 children are now working under this method. The children enter the work in the third grade and continue through the sixth. So far, approximately 200 children

[11] In 1924, 21 elementary-school teachers and 5 high-school teachers have been released from classroom duties and, after special training, spend their time in giving group tests throughout a school, using the plan described in McCall's *How to Measure in Education*. This has been described in part by Willis W. Clark, in the *Journal of Educational Research*, under the title "Educational status of the Los Angeles elementary schools."

have been sent to the junior high school. These have received very favorable reports. Even those who do not have special ability in school work are reported as being independent students.

Every pupil in the grades is given various standardized achievement tests and participates in a group intelligence test. These place him as to group and as to type at work he needs in each subject.

After a child is tested, his progress card shows him just what he is to do in each subject at a given time until he has proved his strength or weakness.

In the upper grades a child is allowed to make his own progress, giving the major portion of his time to the subject in which he is weakest. He selects his materials and works by himself. If he comes to an insurmountable difficulty, he asks his neighbor to help him, as in any social order. If the neighbor is unable to help, he takes his difficulty to the authority, the teacher. After she has straightened out his manner of attack, he returns to work alone.

When he has finished the level or when he finds the work too easy, he asks for a test in that subject. If he passes it, he takes up the work of the next level: if he does not pass it, he puts more time on the work before asking for another test.

The social group consciousness is highly developed in this method of instruction. First in his dependence upon his neighbor for help in timing, in pronouncing of words, in correcting written expression exercises; later in consideration for his neighbor during tests. When a number are taking time tests, all the other children are as quiet as possible, tip-toeing when it is necessary to leave their seats, and discontinuing all whispering in connection with work—all of this without suggestion from the teacher. Even the little B3's sense the significance of quiet while their neighbor is trying to concentrate on a critical piece of work. As soon, however, as the teacher calls time, there is a hum of work again.

There is much more satisfaction to the principal in visiting a room where individual work is in progress than in visiting one which adheres to the traditional class methods. A visit does not merely note a brilliant lesson on the part of the teacher or perfect order because of the presence of the principal. The children are perfectly free and do not fear criticism because of moving freely about nor because of talking with their neighbors concerning their

work. The principal must understand the giving of educational, group intelligence, and individual intelligence tests. It is also necessary to be able to analyze the results of such tests and to know the teachers and their abilities, so as to judge which one will be able to understand the special needs of each child.

When a new child enters the school, he is given the placement tests by the principal:—the Courtis tests in fundamentals, if he is B4 or above (the primary tests are given to those below), the Gray, Starch, Woody-McCall and a National Group Test. The results of these tests are analyzed and the pupil placed in the room doing the group work of his grade. If he is below that grade in one or more subjects, he is given work of the level that his tests indicate and is encouraged to catch up to his grade.

The principal must check up frequently on particular children so as to be certain that her judgment of the child's requirements and the teacher's abilities has been exact.

Many children are able to pass the comprehension tests, yet are not able to give orally to others the things they have learned. In order that a child may overcome this disability, there is a course in oral expression. This consists of reports given to the class. Each child gives two or three reports during the term, selecting history, geography or current event topics from a list furnished to the class; or he may choose his own topic. Ample time is given for preparation. He may do all of the work outside of school time, getting material at home or at the public library. If he has his other work well in hand, he may prepare his report in the classroom. He is to be the judge. A list of questions is prepared whereby he is able to test his ability to give his knowledge to others.

There are certain standards of performance that are laid down. After the report and questions are completed, the pupil reads these standards to the class and the members vote upon his ability to meet the requirements.

This method develops the oral abilities and causes a sensitive child to become less self-conscious. He takes part in judging the work of his fellows and is able to profit by the judgment of his work by others. The evaluations of these points are entirely impersonal; they are given for the benefit of the individual and for the benefit of the group.

The same individual development and group consciousness is encouraged in the work in nature study, physical training, and manual arts.

Parents, as a rule, are enthusiastic about the system. Many have volunteered the fact that their children are much more interested, others that their children are much less nervous than under the old system. Under the class system, slow, normal children can sometimes slip through the grades without their real abilities or disabilities being discovered until they reach the junior high school, but these children are discerned in the individual work immediately. Of course, the parents of such children sometimes cannot understand their children's disability and object to its discovery, but, for the most part, parents appreciate the definiteness of the teacher's information about their children and the adaptation of the school work to their children's needs.

V. INDIVIDUALIZED INSTRUCTION IN DETROIT

The slow, steady individualization of work in the public school system of a large city is best illustrated by the work in Detroit. Beginning ten years ago, these schools have gradually been breaking the lock-step. Pending complete individualization, they have made shift with ability grouping.

But the results of this ability grouping have convinced Stuart Courtis that complete individualization of certain parts of school work is the only real way to adjust the schools to individual differences.

The Development of Individualized Instruction At Detroit

By Stuart A. Courtis
Detroit Teachers College

Detroit for many years has been officially committed to a policy of individualization of mass instruction wherever the goal of instructional effort is the development of individual skill in control of the fundamental tools.

The process of individualization of instruction began far back in the past. The first educational tests were given in the Detroit schools in 1910 and the very first data secured made clear both the inefficiency of mass methods and the need for adjustment of work to individuals. The results of the New York City and Boston surveys in 1912-13 were decisive in their influence.[12] They suggested that the unsatisfactory conditions observed in Detroit were universal (which has since been proved to be the case); also that the remedy was to be sought in devising methods of adjusting school work to individual needs. The writer had already begun crude experiments in this direction and these were now pushed through to completion. His standard practice tests in arithmetic are the outcome of those experiments. The next year Assistant Superintendent Spain began experimental work in the Detroit public schools with a practice booklet modeled on the same plan. In his report to the Superinten-

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[12] Report of Committee on School Inquiry, Part II, Subdivision I, Section D, pp. 76, 153, 155.

dent,[13] Mr. Spain says: "The only conclusion to be drawn from these results seems to be that improvement in arithmetic must be brought about through some device that will reach each individual and enable him to progress at his own rate." These early experiments yielded conclusive evidence of the value of the new principles, although many of the data have long since been lost in discarded files.

In 1914 a Bureau of Educational Research was established and the writer was appointed supervisor in charge, to introduce his individualized lessons in arithmetic into the Detroit schools, and to measure and improve the efficiency of teaching in the other school subjects. The drill lessons in arithmetic were used in sixty schools the first year.

The Detroit standard practice tests in arithmetic were specifically designed to enable a teacher to adjust drill work in arithmetic to the needs of her individual pupils. They consist of a series of exercises in the four operations with whole numbers, ranging in content from use of simple combinations to complex operations. Each lesson involves some new element, as bridging the tens, control of attention span, carrying, etc., so that the tests are diagnostic. Each lesson is standardized and made to contain enough material of its type to permit a uniform time allowance for all lessons. For instance, if the time allowed for a given grade is four minutes for Lesson 1, the time allowance for every lesson is four minutes. It is this feature which makes it possible completely to individualize progress without destroying the class formation. The first day the entire class, however large, takes the first lesson. Only those who finish all examples in the tests in the time allowed and have every example right are considered to have passed the test. Thus, growth in both rate and accuracy up to standard is assured in those who pass a test and at the same time over-training is guarded against. As soon as a child finishes a lesson, he goes on at once to the next. If he fails, it is proof that he needs to study until he masters the element of difficulty involved. The tests are constructed with a device which makes correction by the pupils possible. As the routine work of the teacher is concerned only with

[13] Seventy-first Annual Report of the Board of Education of the City of Detroit for the year ending June 30, 1914.

timing and recording, each child can work at the task which is for him the critical next step in his development. He can progress at his own rate and learn in his own way without in the least disturbing the organization of the class as a whole. To the casual observer of a test period, it might seem that the teacher was conducting a mass drill. However, closer inspection would show that by the middle of the semester the children may be working on 20 or 30 different lessons and that the work is really completely and perfectly individualized.

An essential element in the correct use of the practice tests is the transfer of responsibility for growth from teacher to pupil. Early experiments proved that, in drills for skill, mere repetition without the desire and purpose to improve has little effect. Accordingly, self-scoring devices, daily individual records, and graphs were used as an aid to motivation. That is, the children were taken into partnership and put in charge of their own development. Only those papers in which the children themselves can find no mistake come to the teacher. She is thus relieved of a vast amount of drudgery and set free for remedial work with individuals. Moreover, the repeated failure of any pupil on a particular lesson is warning that the child needs assistance with the particular element of difficulty involved. The tests thus act as selective instruments to indicate both which children need assistance and the nature of the assistance needed. Experience shows that where children really take charge of their own development, one competent teacher can minister adequately to the needs of 50 children, yet completely individualize her instruction.

The early control experiments with the practice tests yielded remarkable results.[14] Measured in terms both of the amount of gain and of the number of children gaining, selected teachers, using the practice tests as they were designed to be used, secured five and six times the conventional gains. However, when practice tests were used by teachers on a large scale, the results proved heartbreakingly disappointing. Only a very slight increase in efficiency could be discovered when teachers merely used the test cards as so much

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[14] Confirmed by other investigators. See "An Experiment in the Fundamentals," by C. D. Mead, Letter of Transmittal. School Efficiency Monographs.

teacher-controlled drill material. Thus, although the experimental work proved that individualization was to be desired, the immediate problem became the training of teachers to a new point of view.

As an aid to this education of teachers, a special form of record sheet (see illustration) was adopted and made uniform for all the routine testing of the city. Class scores, instead of being averages in terms of examples worked, percents of accuracy, etc., were made indices of how closely children approximated the standards for their grades. The record sheet was divided into five divisions. The scores in each division are printed on the record sheets. As the teacher tabulates, she sees at once where the individual stands. Those who fall in Group I are already at standard and can be excused from drill work of the type tested. Those who fall in Group II are so near standard that ordinary daily use of skill in applied work will supply the drill needed. They, too, can be excused from drill; if given the drill lessons, they will finish in less than standard time. Those in Group III are average children in need of thorough drill. Those in Group IV need an extra amount of drill, while those in Group V are so far behind that without special attention they are almost certain to fail.

The record sheet as a whole thus presents a vivid picture of where every child stands in relation to the standard, and emphasizes individual differences. The teacher's task is to help all the children reach Group I. The class score is determined by the percentage of children in each group. These are given arbitrary weights depending upon the task to be accomplished. When every child is up to standard, the score is 1000 points. A score of 300 thus means that the class as a whole has only 30 percent of the standard development desired.

This record sheet, adopted in 1918, has been a very great aid in developing, in both teachers and children, a realization of the differences in achievements of individuals and in leading to appraisal of individual progress. Much teacher initiation in temporary grouping of pupils for instructional purposes and in selective treatment of individuals has been a consequence. There has been a great growth in the use of individual progress graphs and of many different informal methods of individualizing instruction.

Tabulation: Initial

Detroit Public Schools
Department of Educational Research

Number

Spelling Dictation Test, Class Record Sheet

Duplicate: To be returned to the department

School Illustration Room 210

Examiner Esther Johnson Grade ..... Group .....

Date 9/16/23 Test used: Form H

Special conditions affecting the results .....

Class Score: Points this test 744 Points previous test ..... Gain .....

Results Correct ..... Notice of mistakes sent .....

Results checked by .....

		No.	%	Points
Scores Group I	Children of Standard Ability 0 mistakes, or perfect papers. HH	5	33 x 10	330
Scores Group II	Children for whom regular work will furnish sufficient drill 1 / 2 / 3 11	4	27 x 9	243
Scores Group III	Children in need of thorough drill 4 6 8 5 / 7 9 /	2	13 x 7	91
Scores Group IV	Children who need special attention and extra drill 10 13 / 16 11 / 14 17 12 15 18 /	3	20 x 4	80
Scores Group V	Children for whom some special adjustment of work must be made Record here all scores larger than those above. 23	1	7 x 0	0
	Totals	15	100	744

Note: 12 means 12 words misspelled.
Record here all scores changed by retesting.

Since, for the development of knowledge and skill, the use of standardized practice test material completely solves all problems of dealing with differences in intelligence, achievement, and rates of growth, and yet does not upset the conventional class organization, there has been a persistent clamor for similar materials in other subjects. The essential features of the practice tests in arithmetic described above; namely,

(1) unit tasks, each dealing with one new element,
(2) standards of achievement for each task,
(3) provision for self-directed study,
(4) provision for self-appraisal of achievement and growth,
(5) individual progress from task to task instead of term to term,

have been incorporated into all materials designed to aid in the individualization of instruction in the Detroit schools. Therefore, only brief accounts will be given of the other specific materials developed. In each, minor modifications have been made, as needed, to adapt the principles to the different subject-matter fields.

In the field of vocational education the unit task idea has been used effectively for many years. In drawing, in machine and woodworking shops, in bookkeeping and typewriting, in sewing and cooking, activities have always been divided into unit wholes and some provision made for progress at varying rates. With the advent of measurement and the spread of the ideals and principles of individualization, many types of work in the vocational education department have become more completely individualized than before. These changes consist for the most part in more scientific preparation of lesson sheets, or "job sheets," greater use of objective standards and tests as self-measuring devices, larger use of varying individual or group rates of progress.

In addition to the formal printed materials used by the agencies listed above, there are innumerable informal adaptations of individualized instruction to be found in the daily class work of very many teachers.

During September, 1924, the situation in Detroit in regard to

the formal individualization of instruction designed to develop educational skill is given in the following table:

Subject	Year Introduced	Grades	No. of Children	Name of Material
Arithmetic (4 operations with whole numbers)	1914	3-8	65,000	Practice tests in arithmetic
Writing	1918	3-8	70,000	Practice tests in handwriting
Reading	1921	1B-1A	18,000	Picture-Story reading lessons
Spelling	1922	1-3	42,000 Experimental	Progressive lessons in spelling
Language Usage	1923	5-8	10,500 Experimental	Remedial lessons in punctuation and capitalization
				Remedial lessons in grammatical forms

How far future development of practice tests will go, it is hard to prophesy. The work already done has revealed certain difficulties and defects and suggested desirable modifications. For one thing, it is apparent that an ideal course of study would consist of two parts: (1) a series of social projects in which there would be need for the use of fundamental skills in meaningful situations, and (2) a series of self-instructive, self-appraising practice exercises, so closely correlated with the project work that children could avail themselves of drill exercises as they became conscious of the need. The danger of the completely organized drill system, however perfectly individualized, is that both teachers and children will come to consider skills as ends in themselves. Under such conditions, the transfer value of the skill developed is small. While the danger is negligible for competent teachers who neither overemphasize the drill work, nor permit the use of drill exercises by children except in response to a felt need, it is a very real danger for teachers without vision. In many ways the problem is not "How to individ-

ualize school work?" but "How to secure teachers with the right points of view?" On the other hand, the unit-task idea, democratically administered by a competent teacher, solves very many of the distressing problems caused by individual differences and greatly increases the efficiency of teaching. Individualizing of mass instruction has come to stay, but in Detroit there is still room for many constructive contributions before a final standard form is attained.

VI. INDIVIDUAL WORK IN A VOCATIONAL SCHOOL

Vocational education is more often individualized than is regular, academic education. Commercial schools have long since abandoned wasteful class methods and allowed students to progress as individuals. Shop work of all kinds has lent itself readily to individual instruction. Often, however, the academic departments of vocational schools have been quite unrelated to the shops, and have held to the conventional class method of teaching.

Miss Mary Comings is head of the English department in the Vocational School at Madison, Wisconsin. She has individualized her English work completely and correlated it with the work in the shops. In the following brief account she tells something of the methods and results.

Individualization of Work In the Vocational School At Madison

By Mary Huntington Comings
Vocational School, Madison, Wisconsin

Perhaps a word of explanation for those who are unacquainted with the problems of the vocational schools is in order at the beginning. All the educational misfits; all the boys or girls who are disgusted with the public schools or weary of the academic subjects; those that have been retarded by foreign birth, illness, or mental incapacity; as well as the alert, eager students who have been forced by economic necessity into employment—all these flock to our school. Some of them are of foreign birth, most of them are of recent alien extraction, and practically all of them come from illiterate homes. We have full-time, half-time, and part-time (those who come one day per week) classes, and the pupils shift continually from one group to another. In one class of fifteen scholars nine different grades were represented. Imagine attempting to teach *English,* the most despised of all the much despised academic subjects, to such a group! One Italian boy exactly expressed the attitude as well as the language acquirements of part-time boys when he said: "I don't need no help in *pronounceiation.*"

Obviously, the old group methods simply would not work under such circumstances.

Last spring, therefore, I went to the instructors in woodworking, machine-shop, and auto-mechanics, to find out whether it would be possible to correlate the English with the shop work and so make a stronger appeal to these boys who are principally interested in *the job*. In these shop classes, the instructors were using textbooks, and all of them complained that their work was retarded by the boys who could not read. One instructor said he often had to spend most of his class period teaching reading instead of auto-mechanics.

Since I was already a convert to the individual progress method, I set about applying the principle, in part at least, to the problem in hand. Now, each boy receives a booklet made up of lesson sheets based on the shop texts. These sheets give a definite assignment in the book. The assignments are followed by questions on the content of the material studied. After each question, a space is left in which the pupil writes his answer. These lesson sheets thus combine reading for comprehension with practice in composition. As often as possible, thought questions not definitely answered by the text are introduced. Short tests of different kinds are used to give some variety to the work. Occasionally, a pupil is asked to compare his answer with one given in a sealed envelope attached to the lesson sheet. A sample lesson sheet is reproduced herewith:

Machine Tool Operation

Joseph O. Johnson
Mary Huntington Comings

Read, "To the Student," pages IX and X of the introduction.

Write the answers to the following questions in the space left after each question:

1. Do you want to become a first-class machinist?
2. What do you understand by "machine shop practice?"

Page 1 to Sec. 1, page 4. Read and then write the answers.

1. Why is this sometimes called "the mechanical age?"
2. Give three reasons why the machinist's trade is a great trade.
3. What does your author say about the job of "machine hand?"
4. What do you think about it?
5. In the machinist's job, which is more important, muscle or brains?
6. Of what interest is the statement on page three that "90 percent of the foremen have been promoted from the ranks of the machinists, and 90 percent of the superintendents have previously been foremen?"

Each pupil taking this course goes through the work on this sheet at his own rate. When he has completed it satisfactorily, he passes on to the next assignment sheet.

So far, no attempt has been made to diagnose individual difficulties, nor to make the work self-corrective. Even this partial application of the individual progress methods, however, has helped greatly. The ambitious pupil is not held back by the dullard or the slacker. The boy who enters school late does not disrupt the work of the class, nor is he handicapped by plunging into the middle of the subject. He can begin, like those who entered the first day, with the first lesson. This organization of the material makes it possible for the able and ambitious student to continue his work at home almost as well as at school. Best of all, the pupil is allowed some selection in the study he takes. In some of my classes in English, boys are working on five different subjects without in the least disturbing each other or adding to my burdens. As soon as possible, the number of correlated shop subjects offered for study in the English classes will be greatly increased.

This method gives much greater opportunity for close personal contacts between teacher and pupils. This contact is tremendously important when almost every pupil in the class offers a distinct, and often a very difficult, problem to the teacher.

Other schools are experimenting with the individual progress method; the State Board of Vocational Education is interested; and I personally believe this method is *the* coming thing in vocational education in the state of Wisconsin.

VII. INDIVIDUALIZING THE WORK OF RURAL SCHOOLS

While the Winnetka and Dalton Plans, the work of Miss Mackinder in London, that of Sutherland in Los Angeles, that of Courtis in Detroit, and that in the Madison, Wisconsin, Vocational School, have been directed toward the individualization of city schools, U. J. Hoffman in Illinois and R. N. Brown in Connecticut have been working out a plan for individual work in rural schools.

Under their plans, the daily program is greatly reduced, and the opportunity for individual work increased. Rural schools were once almost entirely individual in their methods. Then they took over the graded system of the city, with some of its advantages and many of its evils. But those which have adopted the plans presented by Mr. Brown and Mr. Hoffman have retained whatever advantages lay in the graded plan while wiping out most of the evils. Mr. Hoffman gives the general background for the change to individual work and illustrates briefly the way it is carried out in some of the rural schools of Illinois. Mr. Brown gives a typical Connecticut rural school program under the individual plan, describes in some detail how the work is individualized, and cites some of the results obtained in terms of pupil achievement.

I. Individualization in One-Teacher Schools in Illinois

By U. J. Hoffman

State Supervisor of Rural Schools, Illinois

During the decades 1870 to 1890, the forward movement in the one-teacher schools was to 'grade' them and follow a prescribed course of study. This was indeed a step forward. But when the attempt was made to conduct the work as it is done in the graded school, successful teaching and study become quite impossible.

To teach the pupils exclusively in classes in every subject every day required forty class periods daily. To avoid this great number, the plan of alternation was devised. This combines grades and requires the two years of work to alternate, reducing the class periods to thirty-two daily, an average of ten minutes per class. The teacher's time is all occupied in "hearing recitations." The expression states the fact accurately. To the teacher and to the pupil, the recita-

tion becomes the chief thing in the school. The higher grades spend one-fourth of their time on the recitation bench; the lower grades only about one-tenth; for the rest of the day they shift for themselves, except when the teacher takes time from classes which are reciting.

To make it possible for the pupil to spend most of his time in study under the direction and assistance of the teacher, to give the teacher time to do real teaching, that is, to help the pupil individually to learn, a program of procedure must be devised which will make these things possible.

In Illinois the following procedure has been recommended and is employed by the teachers who are courageous enough to depart from the traditional way, and who are so well equipped that they can help children to learn instead of merely following the routine of rushing through the daily program.

Four Schools in a Day

The First Session—A Reading School: From the opening until the mid-forenoon rest period, the whole school is engaged in reading. Spelling takes up fifteen minutes.

The Second Session—An Arithmetic School: Until noon, the whole school, except the first and second grades, is engaged in arithmetic.

The Third Session—A Language School: All, except the first and second grades, are engaged in grammar and language. Writing, physiology, and civics require twenty minutes.

The Fourth Session—A History and Geography School: All the school, except the first and second grades, are engaged in United States history, geography, and nature study.

This sequence of study gives the pupil the maximal amount of time for study and gives the teacher time for coaching the less capable. When a pupil has a class period, he may do his studying in that subject either before or after class or both before and after. If the class period comes in the middle of the session, his thoughts are not diverted from the subject by reciting in another subject. The teacher's mind is not diverted from the subject, though she has pupils of all stages of advancement in both individual and class instruction.

Class Instruction

The lower grades have class periods every day in every subject. This is necessary for they learn mostly from the teacher. The upper

grades have class periods only when the best can be done for them in that way. When the class period is omitted, the time is used by the pupils in study and by the teacher in giving them the assistance and direction which they need in order to study effectively. These pupils learn mostly from books. The teacher's best work is to help them to use books successfully. For most pupils, this can be done better by individual than by class instruction.

A class instruction period. When a class enters upon a new problem, all can be served at the same time. The problem is clearly presented to the class by the teacher—that is, the lesson is properly and adequately assigned. The teacher leads and does most of the work; *the children work with her.* She shows them what to do, how to do it, arouses their curiosity and interest, inspires them to do it, not for her, but for themselves.

The practice and coaching period. When the class period is omitted, the pupil has the whole session uninterrupted to do the work assigned. The teacher is free to help those who need help at the time they need it, when they are trying to do the work and fail. Most of the pupils have learned how in the class period. All they need is practice or time to complete the task. If any did not learn how in the class instruction period, the teacher shows them individually and does not waste the time of those who need not be shown. She encourages and guides the talented and skillful, but gives the slow and awkward the help which they need.

The discussion period. After several days, when all have solved the problem or mastered the lesson under the guidance of the teacher, the class meets to talk over what they have done. Additional information is obtained from each other and from the teacher. Errors are corrected; the whole problem is reviewed.

The test. When the pupils have mastered a subject or solved a problem, they want to be tested to see whether they know what they think they know or can do what they think they can do. This can be done to the best advantage when the class is assembled for the purpose. The pupil is not tested in the instruction, study, or discussion periods. In these, he is not frightened, but encouraged to reveal his lack of knowledge or skill. The test is given to prove to himself that he can do what is required, not to prove to the doubting teacher that he has done what he was told to do.

Essential Equipment

As the one-teacher school has few in a grade and is not complicated as is a system of graded schools, elaborate equipment is not necessary; indeed, it would prove a burden. For individual instruction, good textbooks and a suitable library only are essential. Reference books, such as Compton's *Picture Encyclopedia* and *The World Book*, containing an abundance of material on all subjects and adapted to all stages of advancement of pupils, are very necessary to supplement the texts.

The formal school readers are used only in the lower grades to teach the mechanics of reading. They may also be used in the upper grades for drill and for literary interpretation. For the most part, each pupil spends the reading session in reading for himself the library books which appeal to him for what he can learn from them. History stories, geography stories, nature study, general information, and literary books are utilized to increase the pupils' vocabulary and knowledge, as well as to form the habit of reading.

The Organization and Daily Program

Two programs are herewith presented. The first shows how the school is organized for exclusively class instruction. The second shows how it is organized to give both individual and class instruction. The notes explain what may not be clear in the diagram.

Daily Program for Exclusively Class Instruction

Grades	Begin	Time	Subjects	Grades	Begin	Time	Subjects
All	9:00	10	Gen. Exercises	8	1:00	10	Gram.
7–8	9:10	10	Reading	7	1:10	10	"
5–6	9:20	10	"	6	1:20	10	Lang.
4	9:30	10	"	5	1:30	10	"
3	9:40	10	"	3–4	1:40	10	"
2	9:50	10	"	1–2	1:50	15	Read. & Lang.
1	10:00	10	"	7–8	2:05	15	Physiology
All	10:10	15	Spelling	All	2:20	10	Writing
All	10:25	15	Rest	All	2:30	15	Rest
8	10:40	10	Arith.	1–2	2:45	10	Const.
7	10:50	10	"	3–4	2:55	10	Nature
6	11:00	10	"	5–6	3:05	10	Geog.
5	11:10	10	"	5–6	3:15	15	"
4	11:20	10	"	7–8	3:30	15	"
3	11:30	15	"	7–8	3:45	15	Hist.
1–2	11:45	15	Read. & Num.				
All	12:00	60	Noon	All	4:00		Dismissal

Daily Program for Individual and Class Instruction

Grades	Begin	Time	Subject	Inst.	Notes
All	9:00	10	Gen. Exercises		
(4-5) or (6-7-8)	9:10	20	Reading	Indv.	1
1	9:30	10	"	Class	
2	9:40	10	"	Class	
3	9:50	10	"	Indv. or Class	
(4-5) (6-7-8)	10:00	15	"	Class	2
All	10:15	15	Spelling	Class	
All	10:30	15	Rest		
4-5-6-7-8	10:45	20	Arithmetic	Indv.	3
1-2	11:05	10	Read. & Num.	Class	4
3	11:15	10	Num.	Class	
4-5-6-7-8	11:25	35	Arithmetic	Class	5
All	12:00	60	Noon		
(3-4) 5-6-7-8	1:00	20	Language	Indv.	6
1-2	1:20	10	"	Class	7
(3-4) 5-6-7-8	1:30	40	"	Class	8
7-8	2:10	10	Physiology	Indv. or Class	9
All	2:20	10	Writing	Class	10
All	2:30	15	Rest		
1-2	2:45	10	Const.	Class	11
(5-6) (7-8)	2:55	20	Geog.	Indv. or Class	12
(3-4)	3:15	10	Nature Study	Class	
(5-6) (7-8)	3:25	35	History	Class or Indv.	13
All	4:00		Dismissal		

Notes on the Second Daily Program

1-2. These grades are grouped into two classes. Individual differences can be dealt with by individual instruction and drill. Time, fifteen minutes, is provided daily for class instruction. Only one group a day should have class instruction. If neither group has class instruction, the fifteen minutes can be distributed to the other class periods. The third grade can also often be better served by individual than by class instruction. The ten minutes can then be utilized for that.

3-5. Alternation or grouping other than by grades is not feasible in arithmetic. Twenty minutes is utilized for individual instruction. This is ample time for three grades and leaves thirty-five minutes for class instruction for two grades. The third grade can often utilize its ten minutes in doing exercises under the direction of the teacher.

4. The number work of the first and second grades can be done in conjunction with their reading. They can learn to count, to measure, and to read numerals.

6-8. The oral language work of the third and fourth grades can be alternated and the classes combined. Class instruction is necessary

oftener in language and grammar than in other subjects. Probably only one group a day should have individual instruction. Twenty minutes is probably more than is necessary. The time saved can be distributed to the classes which need more than their share of the forty minutes for class instruction.

7. Language should be given in conjunction with reading.

9. Physiology and civics are studied a half-year each, and the seventh and eighth year's work alternate. Either class or individual instruction can be utilized in the ten minutes assigned.

10. Writing and drawing may be had on alternate days.

11. The first and second grades have construction work and may be dismissed any time after this exercise.

12-13. Neither the (5-6) group nor the (7-8) group should have class instruction in both geography and history the same day. At most, they should have a class period in each subject on alternate days. The (3-4) grades can have nature study together each day, or if separated, can have class instruction on alternate days.

The geography and history session should be used to study the text and do exercises. The supplementary reading for these subjects can be done during the reading session.

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2. Individualization in One-Teacher Schools in Connecticut

By R. N. Brown

Superintendent of Schools, Thomaston, Connecticut

The advantages and disadvantages of the individualization of school work are amply presented elsewhere in the *Yearbook*. This contribution, therefore, will be confined to a report of the work in individualization as it is actually being carried on in our one-teacher schools after three years of experiment.

The Program

The following program is in use in one of our eight-grade, one-room schools. In a *majority* of our one-teacher schools one or two grades are not represented and modification of the program is made accordingly.

DAILY PROGRAM

Time	Grade	Classes	Individual and Class Instruction
9:00- 9:05	All	Opening	Reading
9:05- 9:10	All	General Directions	Daily
9:10- 9:25	I	Reading	Daily
9:25- 9:35	II	Reading	Directed study or
9:10-10:15	III-VIII	Reading	class exercise as desired
10:15-10:30	All	Spelling Dictation and Penmanship	Daily
10:30-10:45	All	Supervised Play	Daily
10:45-11:00	II	Arithmetic	Individual Help or Drills
11:10-11:50	I	Arithmetic	Daily
10:45-11:50	III-VIII	Arithmetic	Directed study or class exercise as desired
11:50-12:00	I	Reading	Daily
12:00- 1:00	All	Noon Recess	
1:00- 1:10	All	General Directions	Language
1:10- 1:20	I	Reading	Daily
1:20- 1:35	I-II-III	Language Stories	Daily
1:00- 2:30	IV-VIII	Language	Directed study or socialized recitation as desired
2:30- 2:45	All	Supervised Play	Daily
2:45- 2:55	II	Reading	Daily
2:55- 3:05	I	Reading	Daily
2:45- 4:00	III-VIII	Social Studies	Directed study or socialized recitation as desired

NOTES. The term "Directed Study" rather than the term "Individual Instruction" has been used in this program to emphasize this phase of the work with the teachers. In actual practice Individualization means directing the study of the class or individual as the need arises, *plus* a record of the individual progress of each pupil.

As will be noted, there are four general periods each devoted largely to the fundamental subject emphasized, viz., reading, arithmetic, language and grammar, and the social studies.

The first general period of the day is devoted to reading, as this is the most important subject. During this period, each pupil has sixty-five minutes for silent reading on days when there is not a class exercise. If fifteen or twenty minutes are used for class work, he still has at his command fifty minutes for silent study.

The same general plan is followed in the arithmetic period. The long uninterrupted period offers many opportunities for directing the study of the individual.

The third period, devoted largely to language work, provides ample

time for directing the study of the school in classes or individually or for the development of the social recitation, either with one group or, as is more often the case, with the entire school.

The fourth period of the day devotes seventy-five minutes to the "social studies." Particular emphasis is placed on socialization during the afternoon program, with an attempt to handle the entire school as a group.

The program provides for four periods of reading for first-year pupils and two periods for the second-year group. This arrangement has been found very successful, as it scatters the effort in these groups throughout the day and makes for more intense help from the source from which these groups learn most—namely, the teacher.

Special subjects, such as hygiene, nature study, etc., are handled in the "social studies" period as a special socialized class once each week.

General Organization of the Various Subjects

Reading. The work in reading in Grades I and II is carried on purely as a class exercise, as these groups learn principally from the teacher.

In the past, much of the school reading period has been spent with oral work, in spite of the fact that silent reading ability is much more valuable to the majority. With this in mind, we have placed the emphasis on silent reading, giving much direction in methods of study in groups and individually.

In order to correlate the reading with the other subjects and to cover as broad a field as possible, each school is provided with a set of books from a school circulating library large enough to supply each child above Grade II with a different book. These sets of books are changed from school to school as often as necessary, usually about once in two months. If single copies of different books are purchased in sufficient number to provide one book for each child for the normal enrollment of the town, and these arranged in sets as suggested below, a large amount of material becomes available for all the one-teacher schools for approximately the same amount as was formerly expended in supplying each child with the same reader. The advantages of such a library for every child are obvious.

The books in the library mentioned are classified under five headings, viz., literature, history, geography, biography, and nature, with an equal amount of material, as far as possible, for Grades III and IV, V and VI, and VII and VIII.

During the "General Directions" period the teacher gives any

general instructions or directions that are needed. She is then free to carry on her class instruction with Grades I and II while the rest of the school read silently. Immediately following her work with Grades I and II, the teacher is free to devote the remainder of the reading time, or about forty minutes, to individual or group work as desired. This work takes many forms. The teacher, while passing from pupil to pupil, may hear those read orally who are in need of this type of work, but having them read on in their individual books from their present point of progress or she may assist in a careful study of some particular work that needs especial interpretation, selecting and discussing with the pupil various situations, characters, general make-up of the book, plot, etc. She may discuss formally with the individual child the book being read or question him to test his retention.

When a book has been read, each child is tested by the teacher on that book, either orally or with written thought-provoking questions. He is also required to make out a formal book report in writing, which is filed as a record of books read. At frequent intervals, a socialized reading period is carried on, with oral talks, stories, dramatization, oral reading of selected passages, etc.

The teacher's part in the reading period is very important, as she becomes the guide and inspiration to each pupil. Each pupil reading his own book and often carrying on his discussions with the teacher, individualizes the work. The best of relations exist between the teacher and the pupil, because of this mutual interest. This phase of the work cannot be overemphasized.

On the completion of a book in the literary classification, the pupil is required to select his new book from one of the other groups. This method is followed until the pupil has read one book from each classification. He is then allowed to return to the literary group and repeat the cycle.

Spelling. The Washburne *Individual Speller,*[15] with the method suggested in the Teacher's *Manual* accompanying it, is used in all schools. Briefly, the method used is as follows: At the beginning of the year, the words for the entire year are dictated to the class.

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[15] C. W. Washburne, *The Individual Speller*, World Book Co., Yonkers, N. Y., 1924. See also "A spelling curriculum based on research," *Elementary School Journal*, June, 1923.

These are corrected by the teacher. The words misspelled by the pupil become his spelling list for the year, with such additions from his written work as are found necessary. During the spelling period, the pupils are divided into groups of two, and each pupil dictates the words of the day (five or more) to his partner. Frequent tests are given, and words misspelled in these tests are retained on the pupil's list for further study.

Penmanship. Early in the year, each pupil is tested by the Ayres' Scale for Speed and Quality. The results of this test are posted on a chart and dated. Following the test, the work is taken up individually with the pupils and their difficulties are diagnosed. The same scale is used for frequent testing of penmanship and other written papers, and the results are posted. In this way a continual incentive for better work is put before the pupils. The problem of penmanship improvement is an individual one, and this plan makes good use of the teacher's time.

Arithmetic. When the time for arithmetic arrives, the teacher takes time to see that all are properly started on their work, to encourage the diligent, and to persuade the shiftless to greater effort. Then the teacher may take up the work with those groups or individuals ready for new steps, teaching the new process and making careful explanation of assignments. The teacher may also use this time for group or individual discussion of work already completed. Much time is spent in assisting pupils with their individual difficulties, questioning them as they study, directing or suggesting methods of study, testing those ready for tests, etc. The object is at all times to teach the studying of arithmetic, not to hear recitations.

The *work of the afternoon* is socialized as far as possible. Some individual work is carried on with the written and technical work in language and grammar and with the factual side of the social studies. Much has been written on conducting the socialized period. The conducting of this type of work in the one-teacher school is very similar to that in the grade school, with the exception that, in so far as it is feasible, the whole school is included in the work on one problem or project and each grade or group contributes according to its ability or stage of progress.

It is usually planned to have individual work with directed study

in language and grammar on days when a socialized period is held in the social studies, reversing the order on other days. Socialized language work can well be correlated with any subject in the curriculum. The socialization of the afternoon program in the ways briefly mentioned provides an opportunity for the pupil development so badly needed in one-teacher schools. This phase of work should not be neglected.

Materials

The regular commercial textbooks are used in all the work. This can be done by careful planning and the use of single copies of supplementary texts for reference and extra assignment. Lack of especially constructed textbooks for individualization should not be a stumbling block in the way of individualizing the work of the schools. Modern texts can, and do meet the conditions if reasonable care is used in their selection.

Records

In order not to overburden the teacher with a mass of records and at the same time to stimulate the pupil by having his record always before him, each pupil keeps at his seat an individual assignment book and progress sheets in loose-leaf covers, which are in a sense a list of goals for the subject as indicated by the course of study. Part of a sample sheet for arithmetic follows.

ARITHMETIC IV

Long Division				
Types		O.K.	O.K.	O.K.
a. Without Remainder	23)46	9/12/24	11/1/24	1/4/25
b. With Remainder	31)57			
c, d, e, f, g, h, i, g.				
Review Previous Fractions				
Reduction of Fractions				
Types a, b, c, d, e				

(Remainder of sheet omitted, but follows the same form.)

As will be noted, opposite each topic three parallel columns are provided. When the work of any topic is taken up for the first time and the pupil attains a rank of eighty percent in an oral or written test, he is given O.K. in column one. About a month later a review is given, and if a similar rank is attained, an O.K. is given in the second column. Later in the year, the work is again reviewed, and an O.K. is given for proficient work. Each O.K. is dated, as 9/12/24, to keep a check on the time which has elapsed between tests.

The pupil's assignment book is an ordinary notebook. At the left of each page the assignment is written and in general corresponds to the topic on the record sheet. At the right side of the page the pupil keeps his record of work as given him by the teacher. If his work is B or better, he knows he may go on to the next topic assignment; if below that mark, the teacher gives him supplementary assignments.

The assignment books are kept as nearly as possible a week in advance of the pupils. The teacher keeps her own assignment book and pupils copy their assignments or have them dictated.

In order to facilitate the work of the teacher in planning for her work, each pupil doing individual work passes to the teacher, at the close of the day, a slip of paper stating topics completed. Using these slips and her own assignment book, the teacher can readily plan her own work for the next day classwise and individually. In her own plan book and class record book she has a further check on the child's report.

The keeping of the record sheets and assignment book by the pupil is a powerful motive for good work, as each is forced to watch his own progress. The competitive element in motivation enters when one member of a group advances a little more than his companions. This often leads to self-imposed work at home and after school hours.

The record system is not a burdensome one and can readily be used by any conscientious teacher.

Some Results

A few results may be of interest. It is to be borne in mind that these results were obtained from a comparatively small number of pupils, but they indicate some of the possibilities.

Charters Language Test

Median, all Grades III to VIII, 36. Charters Standard 8th grade median, 22.2

Woody-McCall Arithmetic

Median, all grades, 33. Woody, Eighth-grade median, 29.3.

Comparison of a selected group of pupils under the individual instruction plan with the same number under class instruction, all

with practically equal chronological ages and approximately the same I. Q., shows that pupils under individual methods had an average achievement of two years, one month, over those under class organization.

In schools under this plan for two years, forty percent of the pupils did more than the normal grade requirements. Those pupils whose history would be regarded as placing them in the retarded group under class methods improved greatly in progress under the individual method. Some of these pupils completed a normal year's work because of the individual plan, while others, though they did not complete a full year's work, were able to start the second year at the point completed at the close of the previous year and were enabled to do two years' work in three years of continuous progress. They were thus saved the discouragement of the repetition of the grade.

The above evidence of results is of course not conclusive, but it does offer some indication of the possibilities in this type of work. Better results can no doubt be obtained as better methods of organization are developed.

C. SUMMARY

Two main types of adjustment to individual differences have been described: one attempts adjustment without breaking up the basic class organization; the other provides for strictly individual progress in the common essentials, and with it, necessarily, much individual instruction.

Illustrating the first type are several varieties of experiments. Holmes, in Mt. Vernon, New York, has brought down to date the Batavia plan of coaching and encouraging laggards. Wirt, through the Gary organization, has made it possible for children to spend double time on subjects in which they are slow, at the expense of auditorium, shop, or play periods; and he has provided Saturday school, in which the instruction is largely individual, and summer school, for children who wish to make up time. Gray describes the intensive study of problem cases—study of the scientific sort which is needed under any plan of individual or class instruction. Courtis and Sutherland illustrate the highly popular scheme of attempting to classify children into homogeneous groups for purposes of instruction—it has been done in Detroit and Los Angeles about as well as anywhere; it is interesting that in other parts of this *Yearbook* these same men produce evidence to show that it is merely a half-way measure, better than nothing perhaps, but not an adequate way to fit schools to individuals. Reavis, of the University of Chicago High School, and Miller and Leonard, of the Wisconsin High School, describe the method of individualization through differentiated assignments—holding children to the same rate of progress by giving the brighter children longer, harder, or richer assignments—extra work to fill the extra time. This kind of individualization approaches rather closely the second main type, that of breaking the class lock-step entirely.

The first fully organized plan of breaking the lock-step was that of Frederic Burk, late President of the San Francisco State Teachers' College; his technique of self-instruction texts, strictly individual progress in the common essentials, and provision for some compensating socialized activities, has been the source of a number of other experiments. The Winnetka technique is a direct outgrowth of Burk's, adapted to city school systems, and emphasizing perhaps a little more strongly the group and creative activities.

The Dalton Plan, most popular of all, differs from Burk's and the Winnetka plan chiefly in the fact that it has produced and called for almost no new text or curriculum materials, but using what it finds at hand, has done much to free the lives of the children and adapt schools to them. Jessie Mackinder, in London, on the other hand, has individualized instruction through a wealth of ingenious materials; using these, beginners, in large classes, teach themselves reading and number, each working by himself and at his own rate. Sutherland, in Los Angeles, arrived at individual instruction for all children as a result of experiments with maladjusted children. He went through the stage of bringing laggards up to class level, and used intensive study of problem cases; as a result, he worked out a technique, not unlike Burk's, for individual progress and self-instruction. The gradual individualization of the schools of a great city is illustrated by Courtis of Detroit—one of the pioneers in the measurement movement, he early discerned the need for varying amounts of practice and varying amounts of time for varying and variable children. Detroit is not yet fully individualized, but is probably more nearly so than any other metropolis.

The application of individual methods to the academic work in a vocational school is described by Miss Comings of Madison, Wisconsin. Her work in English is intimately correlated with the shop work, and is purely individual. Hoffman, in Illinois, and Brown, in Connecticut, on the other hand, have adapted individual methods to rural schools; they have done this by simply changing the typical, broken-up, miscellaneous program to four long periods, in which most children are studying individually, part of the time under supervision, and in which a few children may be doing class work part of the time, with the teacher. Their method, like the Dalton Plan, involves no new materials and no change in the conventional curriculum.

The various experiments described are reflections of the almost universal recognition of the failure of the conventional class lock-step method of schooling. They illustrate the general awakening to the necessity of fitting the schools to the children for whom schools exist.

In these efforts—some primitive, some mere half-way measures, some the result of scientific research and long preparation—may be

seen the dawn of a new era in education. It is, at best, an early dawn; far more light will be forthcoming during the next generation. But already one can begin to see the day when each child will be recognized as a living human being, differing by right and by necessity from every other human being—differing in his needs, differing in the contribution he can make to mankind, yet a member of the human organism, who must co-ordinate his life with the lives of his fellow members.

SECTION III

STATISTICAL RESULTS OF EXPERIMENTS WITH INDIVIDUALIZATION

While one or more of the various plans which have been described in Section II may seem alluring, and while each one represents long, thoughtful effort to solve the pressing problem of fitting schools to individual differences, it is not enough at this time of a dawning science of education merely to work out a plan, no matter how ingenious. Such plans are only hypothetical solutions of the underlying problem, until careful experimentation and adequate statistical results prove or disprove their claims. Fortunately, considerable experimentation of a scientific nature has been done by several of those whose plans have been described, and by other persons as well. In this section of the *Yearbook* nine specific questions on the effects of individual instruction are considered in the light of such statistical data as are at present available. First, however, there is a description of the sources of these data—the conditions under which the data have been gathered. Then, after the data have been brought to bear upon the nine specific questions, their general validity is discussed.

I. THE SOURCES OF DATA

The sources of the data are various. In Detroit, the Bureau of Research has for years gathered evidence of all kinds and has conducted many experiments. Only samples of the mass of material accumulated in Detroit are presented herein; many of the Detroit results have never been published; typical results, however, are given in answer to certain of the questions raised in this part of the *Yearbook*. The wide variety of children in Detroit and the care with which experiments have been conducted and tabulated, make these results highly significant.

In Los Angeles, A. H. Sutherland, as Director of the Bureau of Research, made a number of intensive studies, for the most part heretofore unpublished. The children with whom Sutherland has dealt have been largely the misfits of all kinds in all parts of the city. He has, however, additional studies in a typical city public school (the Sixty-First Street School), in a district largely composed of such people as carpenters, plumbers, and small tradesmen.

The San Francisco State Teachers' College has for a dozen years kept careful records of each child's progress under individual instruction. As early as 1915, Burk published, in his Monograph C, tables remarkably similar to those given in this *Yearbook*. This shows a constancy of this type of result over a period of nine years. The children who attend the San Francisco State Teachers' College Training School are selected to this extent: no definitely subnormal children are admitted, and a number of unusually intelligent families send their children from various parts of the city to this school. No tuition is charged, however, and the majority of the children come from the modest homes and flats in the neighborhood of the school itself.

Jessie Mackinder, in London, is one of the very few European experimenters to have subjected her experiment to objective measurement. She has used Ballard's standardized tests to compare her product with that of other London schools. Her school is in a poor district; many of the children come from 'homes' which consist of one room for the entire family. The school itself has only a walled-in courtyard for play, and is a typical, ugly building, such as was built in large cities in many parts of Europe and America two or

three decades ago. The classes are over-crowded—forty-five, and even fifty, little 5-, 6-, and 7-year-old children to each teacher.

Part of the experimental evidence, then, is gathered from big cities—Detroit, Los Angeles, San Francisco, and London—and covers a wide range of children's abilities. The investigations of Horn and of the Winnetka Public Schools, on the other hand, have been in smaller places.

Ernest Horn, at the University of Iowa, and various graduate students under his direction, have carried out a series of experiments and observations over a period of seven years as to the possibilities and results of individual work. For example, Horn repeated some of Burk's experiments with the express purpose of determining their reliability, and confirmed Burk's results. Under his direction, McCrory made the study of the results of teaching spelling individually which is reported farther on in this section.

The Detroit and the Winnetka experiments have been so extensive as to warrant a somewhat fuller statement at this point concerning the conditions under which the data later to be presented have been attained. Mr. Courtis first describes these conditions for Detroit and also briefly summarizes the main outcomes.

A. Nature of the Investigations at Detroit and Some Conclusions

By Stuart A. Courtis
Detroit Teachers College

Detroit has had careful scientific experimentation in education since 1910; a Bureau of Instructional Research since 1914. From the beginning, the function of the measurement work was set as the improvement of instruction, and although in the early days much time was given to the determination of the existing efficiency of teaching, nevertheless from the first there have been repeated efforts both to change for the better the existing methods of instruction, and to measure the effects of such changes as were made.

These early comparative studies led to the formulation and adoption of a number of policies; namely, individualization of drill

in the tool subjects, limitation of training, socialization and vitalization of subject matter, use of subject matter as means not ends, and use of surplus time in enriched educational activities rather than in winning double promotions. Once policies were adopted as guides, experimental work was directed more to appraisal of the success with which the policies were being carried out than to appraisal of merit of the policies themselves.

Further, the early work in Detroit was done at a time when both tests and testing technique were developing. Very many of the early studies were imperfect and the results, while of value at the time, were not considered to be worth saving. Also, almost all the work in Detroit was practical in character; that is, it was organized and carried through by regular school agents as a part of routine work. Essential conditions were thoroughly safeguarded, but more attention was given to making experiments function than to collecting and organizing the resulting data.

As a consequence, it is now quite impossible to tell in an adequate fashion the story of experimentation in Detroit. Very many records are buried in discarded files. Many more lack the completeness of minute detail which would be necessary to give them scientific value. What has been done, therefore, is to select a number of typical studies as indicative of the trend of experimentation and to give with these the general conclusions reached. Early studies have been taken from private records, from superintendents' reports, or from the files of the department; more recent studies from published reports to which references are given and from which adequate statement of conditions of experimentation may be derived.

In interpreting certain of the Detroit results a further and very important consideration must be kept in mind. Changes in the efficiency of instruction have been due to the operation of many causes, not one. Without very elaborate experimentation, the determination of the effect of *merely* the individualization of instruction is entirely out of the question. Indeed, one of the studies presented makes clear the fact that individualization of instruction involves an essential pupil-teacher relationship as well as a form of classroom administration. Consequently, the studies reported present measurements of the total changes brought about in Detroit. Some of the other factors to which consideration must also be given are (1)

objective definition of goals, (2) improved methods of classification of children, (3) measurement of the results of teaching, (4) improved and more extensive teacher training, (5) improved methods of supervision, (6) democratization of instruction, otherwise known as "project teaching." However, all of these are directly or implicitly associated with Detroit's program for the individualization of instruction, so that, in a large sense, the effects described may be justly ascribed to the general movement as a cause.

The studies selected as typical of the lines of investigation pursued in Detroit lead to the following conclusions:

(1) Even in the very first grades where the situation is less complex than in the higher grades, in reading, the X-Y-Z plan of ability grouping does not eliminate enormous variation in individual achievement and progress, nor prevent extreme overlapping from group to group, or grade to grade.

(2) Even within groups selected by group mental tests as of equal mental capacity, there is a very wide range in individual rates of progress as soon as opportunity for them is provided.

(3) Practical administration of individualized lessons in handwriting in Grades 3B-4A on a large scale results in very similar range of rates of progress in all groups and grades.

(4) Individualization of instruction saves time for the able by limiting drill to just the amount necessary to achieve standards, and for the handicapped by enabling them to master thoroughly each item before passing to the next.

(5) Individualization of instruction improves efficiency through increasing the number of children who profit by instruction and decreasing the number who fail to gain and the number who are affected adversely.

(6) The net result of the benefit of individualization of instruction is to increase the actual average efficiency of achievement of the group as a whole.

(7) The increase in efficiency of teaching in the case of first-grade reading may result in a first-semester class having an achievement higher than that of the regular third-semester class. In other words, there are possibilities of very great improvement in the efficiency of mass instruction.

(8) The benefits of individualized instruction are not restrict-

ed to a particular subject. The general principles may be applied in all fields, and measurement of each new application that is made confirms the conclusions reached in other fields.

B. Nature of the Investigation at Winnetka

By C. W. Washburne

The most complete statistical investigation of the results of individual instruction and promotion is perhaps that which was financed by the Commonwealth Fund in New York. It was a self-survey of the Winnetka Public Schools during 1923-24, with the aid and advice of Dean William S. Gray of the University of Chicago. A complete record of the investigation is about to be published in monograph form.[1]

A research worker, Mabel Vogel, who had been trained under Burk, who had taught in Winnetka, and who had visited such European experiments as those of Miss Mackinder and Miss Bassett in London and Dr. Decroly in Belgium, was employed for the year to carry out the investigation, under the general direction of the Superintendent of the Winnetka schools and Dean Gray. She was given adequate clerical help. She and her assistants, among other things, gave some 28,000 intelligence and achievement tests to the children in Grades III to VII in the Winnetka schools and in certain other schools with which Winnetka was to be compared.

Considerable care was exercised in the selection of these other schools. A public school system in a suburb with almost exactly the same population and social composition as Winnetka was selected. A progressive experimental private school, long known for the high standard of its socialized and self-expressive activity, was chosen as representing certain of the ideals which the Winnetka schools seek to attain. And the laboratory school of a large university was also selected for comparison, since it, like the Winnetka schools,

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[1] Washburne, C. W.; Vogel, Mabel; and Gray, Wm. S. *Results of Fitting Schools to Individuals.* Supplementary Monograph, Journal of Educational Research, Public School Publishing Co., Bloomington, Illinois, 1925.

attempts to embody the most recent results of scientific research in the educational field and to carry out scientific experiments within the school itself.

In comparing Winnetka with these other three schools, every possible safeguard was taken to guarantee the entire fairness of the various studies. This even went to the extent of employing a disinterested outside witness to be present at the time tests were given. All studies were made by the same person in such a way as to yield strictly comparable results.

II. THE DATA

The results of the Winnetka studies and those of each of the other studies have been brought to bear on these nine questions:

I. Does the attempt to group children by ability result in adaptation to individual differences?

II. Does individual work save time?

III. Does individual work increase or decrease socialized and self-expressive activities?

IV. Does individual work put children through school too fast?

V. Does individual work decrease retardation?

VI. Is individual instruction more or is it less effective than class instruction in teaching tool subjects?

VII. Does individual instruction cost more than class instruction?

VIII. Does individual instruction place too heavy a burden on the teacher?

IX. How does individual work in the elementary school affect pupils' efficiency in the high school?

I. DOES THE ATTEMPT TO GROUP CHILDREN BY ABILITY RESULT IN ADAPTATION TO INDIVIDUAL DIFFERENCES?

Many schools are attempting to solve the problem of adjustment to individual differences by grouping the children in supposedly homogeneous ability-groups, then giving each group the type of instruction that would presumably be best fitted to the needs of the children who compose it. The popularity of this movement makes it highly important to know accurately whether such ability grouping can accomplish its object—whether children can be classified in homogeneous groups; whether groups which appear relatively homogeneous at the beginning remain so during instruction; and whether the same instruction and time are required by all children within each group.

Fortunately, considerable evidence is available. The Detroit public schools have used ability grouping for several years and have furnished accurate data on certain aspects of this question. In Los Angeles additional studies have been made. The records of the San Francisco State Teachers' College throw valuable light on the subject. The Winnetka Public Schools have contributed their quota of evidence. And Ernest Horn, of the University of Iowa, has gathered material of high significance.

A. Data on Ability-Grouping from Detroit

By Stuart A. Courtis
Detroit Teachers' College

The Detroit results prove conclusively that, whether instruction is individualized or not, children of each level of intelligence, as shown by scores in mental tests, have a very wide range of achievement and very different rates of progress in any specific skill.

In support of this conclusion, the following table presents a percentage distribution of the scores in the Detroit Group Vocabulary test of children in the X, Y, and Z sections of the first three half grades, January, 1922[2], showing wide range of achievement within

[2] E. F. Oglesby. "A study of achievements in reading of X, Y, Z groups." *Detroit Journal of Education*, April, 1922, p. 59.

each group and much overlapping from group to group, and from grade to grade.

TABLE 1.—DISTRIBUTION OF SCORES ON GROUP VOCABULARY TEST
(Based on scores of 1050 pupils in 42 schools)

	Grades and Groups								
	1 B			1 A			2 B		
Score	X	Y	Z	X	Y	Z	X	Y	Z
30	22	8		44	16	3	54	29	14
25	25	12	2	26	17	4	28	12	15
20	18	23	3	13	17	15	13	19	19
15	15	17	12	8	17	23	4	18	17
10	10	18	26	5	14	25	1	13	11
5	10	16	33	2	15	18		8	15
0		6	24	2	4	12		1	9
Medians	24.1	17.9	8.9	28.3	20.3	14.0	30.6	24.7	19.4

The table is to be read as follows: in the 1B grade, X group, 22 percent of the children made a score of from 30 to 34 (in the Group Vocabulary Test based upon the first-grade work in reading), 25 percent made a score of from 25 to 29, etc.

In one of the experiments with individualized material in reading, the intelligence ratings of the children by the Psychological Clinic were available for study. The scheme used by the Clinic, based upon Detroit First-Grade Group Intelligence Test, is as follows:

Letter Rating	*Position in Group*	*Letter Rating*	*Position in Group*
A	Highest 8 percent	C—	Next 18 percent
B	Next 12 percent	D	Next 12 percent
C+	Next 24 percent	E	Lowest 8 percent
C	Middle 24 percent		

The time required by the individual children to finish the series of lessons ranged from 12 days to 77 days. In the figure, each vertical line represents a child. The length of the line shows the number of days required to finish the lessons. To save space the C+ and C— groups are omitted. The other children are shown in groups. Note that for the children in the A group, the total time required to finish ranges from 15 to 53 days. Similar variation occurs in the other groups. In terms of average time required to finish (horizontal lines) the A group has a lower average (midscore) than the B group and the B group a lower average than the C group. The significant detail, however, is the range within each group. Neither the ex-

ceptional children nor any of the others form a homogeneous group which learn at the same rate.

The same facts are shown, perhaps more forcibly, although less graphically in Table 2, which is based upon 116 first-grade children. The table is to be read as follows: 33 percent of the 15 children rated A finished the series of lessons in from 10-19 days, 20 percent, or 3, children finished in 20-29 days, and so on. The vertical columns show the percentages of children in each group which finish in a given period. Horizontal comparisons show the relative chances

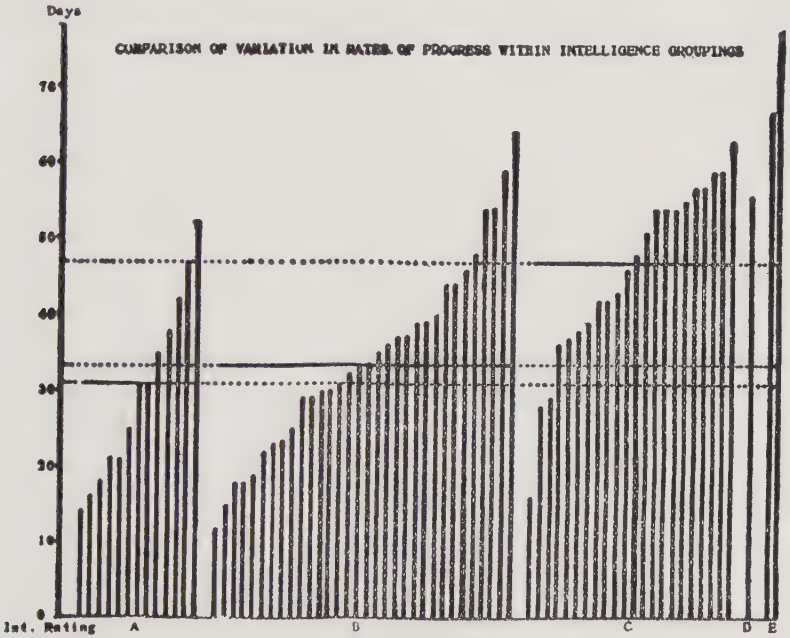

FIG. 1.—TIME IN DAYS REQUIRED BY PUPILS OF DIFFERENT INTELLIGENCE RATINGS TO COMPLETE CERTAIN WORK IN READING

of children of different intelligence levels to finish in a given time. Thus an A child has 33 chances in a hundred of finishing the series in less than 20 days, a B child 16 chances, a C child 3 chances, and so on.

Intelligence is thus a factor determining progress, but by no means the only factor, so that grouping on an intelligence basis is only a partial solution of the problem of individual differences. A

complete solution is furnished by individualization of instruction where any child, whether his intelligence is A, B, C, D, or E, may go as fast or as slowly as his condition at the time demands.

TABLE 2.—RELATION BETWEEN INTELLIGENCE AND TIME REQUIRED TO FINISH A SERIES OF INDIVIDUAL LESSONS IN BEGINNING READING

(Based upon the records of 116 B-1st children. Numbers express percentages of the intelligence groups.)

Days Required to Finish	Intelligence Ratings			
	A	B	C+, C, C—	D, E
10-19	33	16	3	
20-29	20	19	12	
30-39	27	36	34	
40-49	13	16	20	
50-59	7	10	21	33
60-79	0	3	10	67
Total	100	100	100	100
Cases	15	31	67	3

In further support of the conclusion, Table 3 shows the number of lessons in handwriting completed successfully at the end of the first six weeks of the February-June semester, 1924, grades

TABLE 3.—INDIVIDUAL PROGRESS IN HANDWRITING [3]

(Percent of children in each grade completing successfully the number of lessons indicated. Based on records of 1839 children.)

	Grades and Groups											
	3 B			3 A			4 B			4 A		
Lesson	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
1	8	4	5	3	1	1	2	4	8	2	4	3
2	15	16	25	5	4	6	6	7	6	4	5	5
3	19	24	22	7	7	14	10	16	13	7	6	14
4	18	22	12	12	13	18	14	16	18	10	10	7
5	15	18	12	13	18	17	12	17	17	15	13	24
6	19	6	12	13	15	14	9	19	15	17	14	21
7	0	4	7	15	13	14	13	8	11	15	15	11
8	4	3	0	8	9	5	12	5	8	9	10	7
9	2	3	5	9	7	3	9	4	3	6	8	1
10				2	4	3	6	0	1	4	4	2
11				3	3	2	4	1		3	5	1
12				5	3	1	1	2		5	3	3
13				3	2	2	2	1		1	1	
14					1					1	2	1
15				2						1	0	
Median Lessons Completed	4	4	3	6	6	5	6	5	5	6	6	5

[3] From records of Miss Lena M. Shaw, Supervisor of Penmanship.

3B to 4A. The Detroit Standard Practice Tests in Handwriting provide for complete individualization of instruction, and yet the figures below reveal very wide ranges in rates of progress in every group and grade.

The table is to be read as follows: at the end of the first six weeks of the semester, 8 percent of the 3B X children were still working on Lesson 1, 15 percent on Lesson 2, etc. The medians of number of lessons completed in six weeks in the X, Y, and Z groups were 4, 4, 3, respectively.

Many similar records might be shown. All of them prove that when provision is made for individual progress, children in each group move forward at rates which vary widely. The child of exceptional capacity, handicapped by ill health, poor home conditions, etc., may and does make slow progress, while the child of low mentality under favorable conditions may and does make rapid progress. Complete individualization of instruction, whenever the goal is acquisition of knowledge or skill, is, in the writer's judgment, the only complete solution of the problem of adjustment to individual differences. Grouping on the basis of mental capacity is merely an expedient, not a final solution.

Perhaps the best proof that children do not fall into permanent natural ability groupings so specialized that they may be taught as a class of homogeneous ability in all subjects is furnished by the evidence from achievement tests. The Detroit scheme of tabulation places a child in one of five classes with respect to the standard for his subject and grade[4]. The general scheme of tabulation is uniform for all subjects. If there were natural ability groupings, a child in Group III in one subject would be in Group III in all.

The individual records from 26 schools were canvassed and the record cards of all pupils in the 4B grade present for both the initial and the final tests in reading, writing, arithmetic, spelling, and composition, and having their section group recorded, were selected for a study of constancy of position[5]. The midscore position of each child was used as a measure of position and the number of different positions was used as a measure of inconstancy. For in-

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[4] See page 146.

[5] Special tabulation made by P. T. Rankin, Assistant Director in Charge of Instructional Research.

stance, if a child was found to be in Group IV in reading, Group III in writing and in arithmetic, Group V in spelling, and Group II in composition, his position was considered to be Group III and the number of different groups as four. The corresponding measures for a child whose score placed him in Group III in all five tests were "III" and "one."

The consolidated results are shown in Table 4.

TABLE 4.—MEASUREMENT OF CONSTANCY OF ACHIEVEMENT GROUPINGS IN INITIAL TESTS, FEBRUARY, 1924, AND IN FINAL TESTS, JUNE, 1924. NUMBER OF CHILDREN IN EACH ACHIEVEMENT GROUP AND THE NUMBER OF DIFFERENT POSITIONS IN WHICH THEY ARE FOUND

(Subjects: 162 X Children, 251 Y Children, 140 Z Children, Total 553. Grade 4B. Based on Scores in Reading, Writing, Arithmetic, Spelling, and Composition.)

INITIAL TESTS

Groups	X					Y					Z				
Number of Different Positions	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Mid Group															
I															
II			12	5					1				2		
III		5	21	27	1		2	7	7	3			3	2	
IV		9	36	14		1	26	70	19			7	13	2	
V	2	22	8			16	67	32			24	77	8	2	
Total	2	36	77	46	1	17	95	109	27	3	24	84	26	6	0
Percent	1	22	48	28	1	7	38	43	11	1	17	60	19	4	0

FINAL TESTS

Groups	X					Y					Z				
Number of Different Positions	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Mid Group															
1	1	6	4					2							
II	1	12	26	15			5	13	16			1	8	8	
III		8	35	29	2		6	67	52	8		3	25	19	
IV		1	8	6			4	33	24			4	32	12	
V	1	4	3				3	15	3		1	17	10		
Total	3	31	76	50	2	0	18	130	95	8	1	25	75	39	0
Percent	2	19	47	31	1	0	7	52	38	3	1	18	53	28	0

For convenience in making comparisons, the percentage totals from Table 4 are repeated in Table 5 in different groupings:

TABLE 5.—COMPARISON OF INITIAL AND FINAL TESTS

Group	X					Y					Z				
Positions	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Initial	1	22	48	28	1	7	38	43	11	1	17	60	19	4	0
Final	2	19	47	28	1	0	7	52	38	3	1	18	53	28	0
Changes	+1	—3	—1	+3	0	—7	—31	+9	+27	+2	—16	—12	+34	+24	0

The work of the term made small changes in the number of different positions held by the X's in different subects, but greatly increased the spread of the Y's and the Z's, the Z's more than the Y's. In all groups, at the end of the semester, approximately 80 percent of the children are classified in from three to four different achievement groups with respect to the standards in the five subjects.

TABLE 6.—COMPARISON OF X Y Z GROUPS

Time of Test		Initial					Final				
Position		1	2	3	4	5	1	2	3	4	5
Groups	X	1	22	48	28	1	2	19	47	31	1
	Y	7	38	43	11	1	0	7	52	38	3
	Z	17	60	19	4	0	1	18	53	28	0
Group as a whole		8	39	38	14	1	1	13	51	33	2

In both the initial and final tests, the greater the ability of the pupils, the larger the number of positions they occupy with reference to the standards in the different subjects. Not only do children not fall into groups of relatively equal ability in all subjects, but the training given in the Detroit schools tends to increase rather than decrease the diversity. The number of children who maintain a constant position in all subjects is very small, approximately 8 percent at most. Half the children are in at least three different positions with respect to the standards in the five subjects under any form of mass instruction. The administrative difficulties of providing a fixed class organization which shall nevertheless permit adjustment of work to individual needs are very great. However, individualization of instruction, through practice test materials based upon the unit-task, individual-progress idea, provides a solution which is both administratively feasible with large masses of children and educationally efficient.

B. Data on Ability-Grouping from Los Angeles

By Elizabeth T. Sullivan
University of California, Extension Division, Los Angeles, California

An investigation was undertaken in the low fourth grades in seventeen elementary schools of Los Angeles, where the children had been classified previously into three groups, Accelerated (X), Average (Y), and Retarded (Z), on the basis of the "promotion quotients" worked out from scores made on the following tests: Haggerty Delta I, Haggerty Sigma I, Thorndike-McCall Reading Scale No. 2, Woody-McCall Mixed Fundamentals, and a modified Ayres Spelling Test. Follow-up tests, the nature and results of which appear here, were given by seventeen school counselors to all the B4 pupils classed as Retarded (Z) in these seventeen schools, and to an equal number of Accelerated (X) and Average (Y) pupils of B4 grade in the same schools, determined by selecting every other name on the register of these two groups. Attention was given to securing as far as possible a balance between the sexes. Five hundred and seven children were selected, including approximately 143 X, 170 Y, and 194 Z pupils.

The tests were given *individually*. The investigator made definite observation as to the child's method of work, his particular difficulties, and his emotional reactions.

Measures were secured for weight, vital capacity, strength of grip, rate of movement (tapping), vision, hearing, visual apprehension, logical memory, association time, reading, arithmetic, temperament, disposition, mental acumen, environmental conditions (home, school, neighborhood).

For lack of space, and because of the similarity in the relations among the three groups, only a limited number of graphs are included. The graphs appearing in Figure 2 are selected as typical of the others. These eight graphs are typical of many more. The three heavy vertical lines on each graph represent, from left to right, the lower, middle, and upper quartiles of the distribution. Read the graph as follows, beginning with the chronological age of the Z group: One child was 98 months old, one 104 months old, two 107 months old, one each 108, 109, 110, 111, 112, 113 months old, two

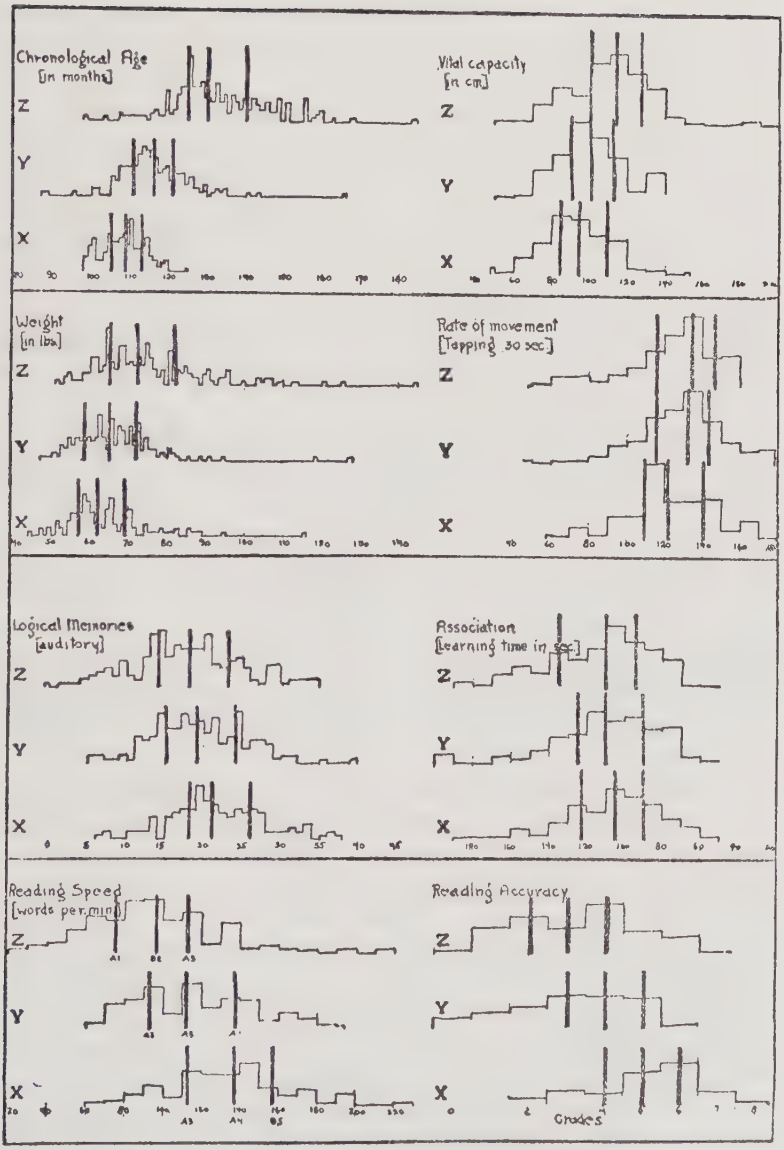

FIGURE 2.—COMPARISONS OF X, Y, AND Z GROUPS IN LOS ANGELES

115 months old, and so on. The lower quartile age was 125 months, the median age 130 months, and upper quartile age 140 months.

The following conclusions emerge:

1. Considered as a whole, the retarded group leads, the average group maintains a second position, and the accelerated group a third position in chronological age, weight, and in all the tests of physical and motor capacity.

2. The situation is exactly the reverse for the groups in all the tests of mental ability, of educational accomplishment, and in the estimates of advantages of school, home, and neighborhood, in which the accelerated tend to be the most favored, the retarded the least favored, while the average maintain a middle position between the other two groups.

3. In sensory capacity no marked differences appear in any of the groups, except that instances of the more serious defects of hearing and vision are more frequent in the average and the retarded groups.

4. The groups are about evenly distributed as regards the classification of temperament, with the exception that a considerable percent of the retarded group are judged as in a state of partial inhibition. This group shows also a large percent of children whose dispositions are rated as pleasant and agreeable most of the time.

5. The group tests employed in the initial reclassification of these children have served effectively as a rough measure.

6. A striking characteristic of all the 'follow-up' tests is the wide range in the distribution of scores made by the children in the three groups.

7. The differences between the groups in the tests of mental ability are significant: the retarded group are at a disadvantage with respect to rate of perception, range of visual apprehension, ability to form new associations by repetition, and strength of logical memory, all of which tend to lengthen the learning time for these children.

8. A second reclassification fruitful of results might be made by grouping the children wherever possible according to their percentile performance, including in the accelerated group all those who are at or above the 75th percentile in several of the tests of mental ability, in the average group those included between the

25th percentile and the 75th percentile, and in the retarded group those scoring below the 25th percentile level. Reclassification on this basis would result in still more homogeneous groups and would permit of more careful observation of the individual difficulties, a differentiation in the amount of time necessary in the separate groups for the processes of perception and association and memory, more carefully planned material for instruction, and more frequent relearning at the point where relearning counts for each child.

Comment by C. W. Washburne

While Dr. Sullivan makes out a good case for the consistent results of the classification, she does not point out the most significant feature of all her graphs—to wit, that the overlap of the three groups in every measure is very great indeed. The difference between the central tendencies of even the highest and lowest groups is always much less than the range of abilities within any one group. At least a fourth of the middle group made as good a record as the bottom half of the best group, and at least a fourth of the poorest group made as good a record as the bottom half of the middle group in every measure of ability or performance. One glance at Miss Sullivan's graphs shows the absurdity of considering the groups as homogeneous—this in spite of the fact that the consistency of her results shows the grouping to have been as reliable as such grouping can be.

C. Data on Ability-Grouping from Winnetka
By Carleton W. Washburne

The Winnetka survey indicated clearly that children do not fall into ability groups, except in the most general sort of way. Data to support this statement were summarized and shown graphically in the 23rd *Yearbook*, Part I, in the section on the "Attainments of Gifted Children under Individual Instruction." The graph is reproduced herewith (Fig. 3).

From these data it is evident that, unless deliberately held together, children of the same intelligence quotient range scatter widely in their school progress.

The records of 367 children, in Grades III to VIII, allowed to progress individually for two years under the Winnetka plan, were divided into three groups according to intelligence quotients. The top quarter, ranging in I. Q. from 123 to 166, were considered as

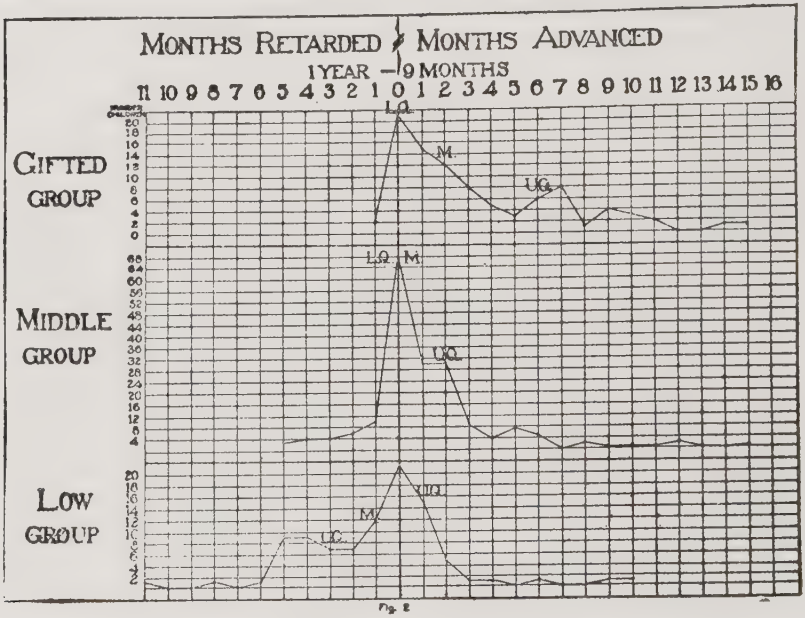

FIGURE 3.—COMPARATIVE PROGRESS RECORDS OF WINNETKA CHILDREN ACCORDING TO INTELLIGENCE QUOTIENTS

The "gifted group" contains the fourth of the children having the highest I. Q.'s (National). The low group contains the records of the children with the lowest fourth of intelligence quotients. The middle group consists of the middle half of the children. Read the chart as follows, beginning at the right of the upper distribution: The most rapid progress in the gifted group was made by one child who was 1 year 6 months (15 months) advanced at the end of 2 years of individual work. One child was 1 year 5 months (14 months) advanced; no children were 12 or 13 months advanced; 2 children were 1 year 2 months (11 months) advanced; 3 children were 1 year 1 month (10 months) advanced; 4 children were 1 year (9 months) advanced, etc.

the "gifted group;" the middle half, with I. Q.'s from 100 to 122, were classified as the "middle group," and the bottom fourth of the children, I. Q.'s 60 to 100, were called the "low group."

The central tendencies of these groups revealed the differences

one would expect—the median child of the gifted group progressed more rapidly than the median child of the middle group, and he in turn progressed more rapidly than the median child of the low group. This was true in every subject measured and in the average of all subjects.

The striking thing, however, was the overlap of the groups. Nearly half the children of the gifted group made poorer progress than the top fourth of the middle group. The top fourth of the low group even excelled the bottom fourth of the gifted group. (See Figure 3.) Consequently, had those children been classified into ability groups by I. Q., large numbers of each group would have been held to standards either above or below their natural ability.

It is true that most advocates of ability grouping nowadays favor a combination of intelligence quotient, achievement quotient, and teacher judgment, rather than a mere intelligence quotient method of classification. But the correlation of these is such that in many children the three factors will point in three different ways, and a classification would, therefore, be a mere compromise.

Ability grouping usually assumes, first, that intelligence quotient and school progress go hand in hand, and second, that a child who is good in one subject is good in all. While both these statements are often true, both are also often false. Within the gifted group, and within the middle group, no correlation was found in Winnetka between intelligence and individual progress (r = .07 and .08, respectively). [6] It is only when children are lumped indiscriminately that positive correlation appears, and then only in such amount (r = .587) as to leave many individuals for whom there is no apparent relation between school progress and intelligence.

The Winnetka data on the relation of school progress in one subject to that in another show the same thing. The coefficient of correlation between reading ability and arithmetic ability is .75, that between reading and formal language (punctuation and capitalization) .79, and that between formal language and arithmetic .86. While all of these are positive and high, they still leave many cases of individual children for whom there is no relation between progress in one subject and that in another.[7]

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[6] In the low group the large difference betweeen a child of I.Q. 60 and one of I.Q. 100 brought a correlation coefficient of r = .407.

[7] See Figures 3 and 4, pp. 256-8, in the *Twenty-third Yearbook, Part I.*

Out of 201 children who did more than a grade a year in reading, 48 did only a grade a year or less in arithmetic and 32 did just a grade a year or less in language.

These data show clearly the fallacy of assuming that *every* child who is strong either in intelligence or in any one subject is strong in the others. They therefore tend to show that ability grouping does not make adequate provision for individual differences.

D. Data on Ability-Grouping from the San Francisco State Teachers' College

By Mary A. Ward, Grace E. Carter, Hilda M. Holmes, and Cecilia Anderson

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The following tables represent the actual number of days taken by each child who is now in the primary department of our school to complete the first and second grades in reading and arithmetic. These grades were chosen for illustration as our records are fullest at this point. A course of study precedes the table for each grade. This outline shows the amount of work accomplished by each child in the time stated in the table. Note the great variation in time taken by children to complete the same unit of work.

1. Reading Records

Table 7 shows the variation in rates of progress of 99 pupils who completed the following course of study in low-first-grade reading:

Goals: (1) Ability to read and reproduce the thought in any story in the State primer; (2) ability to recognize out of content the basic vocabulary of 120 words; (3) ability to read two other primers.

Table 7.—Days Required by Each Child to Attain Goals in Low-First-Grade Reading

4	6	14	19	20	20	23	23	25	25	27	28
28	29	30	30	32	33	35	36	36	37	40	43
43	44	44	44	46	47	47	50	50	52	53	54
54	54	56	56	57	58	59	60	60	60	62	62
63	64	64	64	64	65	65	65	66	66	66	67
68	68	68	69	69	69	70	70	70	70	71	71
71	73	74	74	75	75	75	78	79	79	79	79
80	81	85	88	88	89	89	90	92	101	105	109
114	130	162									

The numerical data in Table 7 are exhibited graphically in Figure 4, which is read as follows: one child attained the goals in four days, another in six days, the next in fourteen days, and so on.

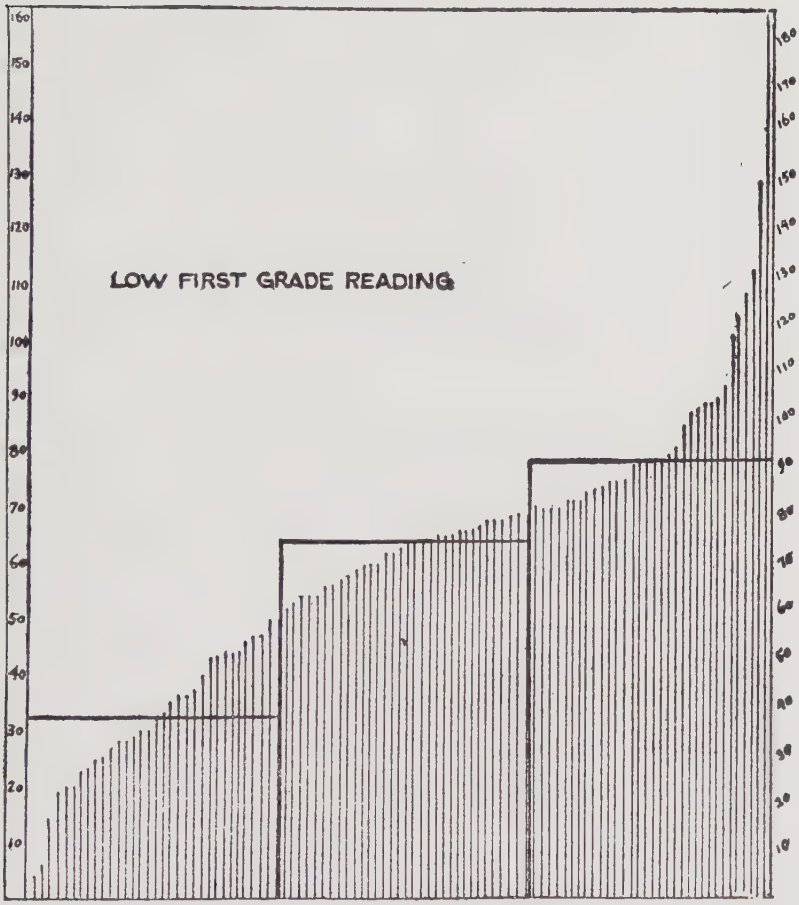

FIGURE 4.—NUMBER OF DAYS REQUIRED BY INDIVIDUAL PUPILS TO COMPLETE A HALF-GRADE'S WORK IN READING AT THE SAN FRANCISCO STATE TEACHERS' COLLEGE

Table 8 shows the variation in rate of progress of 98 children who completed high-first-grade reading when the goal was: the

State First Reader and a sufficient number of books selected from the first-grade reading list to give the pupil power to read any material on that level.

TABLE 8.—DAYS REQUIRED BY EACH CHILD TO COMPLETE HIGH-FIRST-GRADE READING

6	8	10	13	15	15	20	20	20	20	20	20
21	27	27	28	37	37	48	41	42	42	44	44
44	45	47	47	48	48	48	49	49	50	50	51
54	54	54	55	55	57	58	58	58	59	60	60
60	62	63	66	66	70	71	74	80	83	87	90
91	93	99	100	105	106	107	110	111	115	116	118
120	124	125	125	126	129	133	134	140	145	154	156
158	162	184	185	209	217	232	243	286			

Table 9 shows similar data for 94 children who completed low-second-grade reading when the goal was: State Second Reader and a sufficient number of books selected from second-grade reading list to give the individual pupil power to read any material on that level.

TABLE 9.—DAYS REQUIRED BY EACH CHILD TO COMPLETE LOW-SECOND-GRADE READING

10	11	11	13	17	18	18	21	22	23	25	27
27	29	32	32	34	34	36	39	39	41	42	44
45	48	48	48	49	50	51	51	51	52	53	56
58	59	59	59	59	60	60	61	61	61	62	63
63	65	65	67	70	73	73	74	74	76	79	83
86	87	87	88	90	92	94	94	96	102	102	103
104	104	107	107	108	112	113	116	129	130	130	133
135	141	141	145	155	171	183	190	195	224		

Table 10 shows similar data for 80 children who completed high-second-grade reading when the goal was: review of the State Series Reader and showing ability on the second-grade level.

TABLE 10.—DAYS REQUIRED BY EACH CHILD TO COMPLETE HIGH-SECOND-GRADE READING

7	8	9	9	12	13	14	14	17	18	20	21
23	23	23	24	24	25	27	29	31	31	31	32
32	32	34	35	37	38	40	41	42	44	46	47
48	54	56	56	59	61	62	62	66	70	71	72
73	74	74	74	75	77	82	84	85	88	92	94
96	96	97	97	98	99	100	103	105	105	116	122
123	125	128	132	132	150	163	186				

2. Arithmetic Records

Table 11 shows the variation in rate of progress of 112 children who completed low-first-grade arithmetic. Here the goals were: (1)

counting with objects from 1 to 20; (2) counting without objects from 1 to 50; (3) counting by 5's to 120; (4) counting by 10's to 120; (5) reading numbers from 1 to 50; (6) writing numbers from 1 to 50; (7) developing comparison of objects, such as large—small, long—short; (8) making change, as 5 cents, 10 cents, penny etc.; and (9) constructing and organizing a toy shop, grocery store, etc.

TABLE 11.—DAYS REQUIRED BY EACH CHILD TO COMPLETE LOW-FIRST-GRADE ARITHMETIC

6	6	10	10	10	10	14	14	15	18	18	19
20	20	22	22	25	26	26	27	28	28	28	29
29	30	30	32	33	33	35	36	38	38	38	39
39	39	40	40	40	40	41	42	42	43	43	44
44	45	45	46	46	49	49	50	50	50	50	50
50	51	52	53	53	53	53	53	54	54	54	54
54	54	55	55	56	56	56	57	57	58	60	60
60	61	61	61	63	63	63	64	64	66	67	68
69	70	70	70	71	72	73	75	75	79	81	81
89	100	197	272								

Table 12 shows similar data for 112 children who completed the following high-first-grade course of study in arithmetic: reading numbers to 100; (2) writing numbers to 100; (3) counting 2's, even, to 50; (4) counting 2's, odd, to 31; (5) adding 1 to any number; (6) adding 2 to any number; (7) adding 10 to any number; (8) beginning at any number and adding columns of six addends; (9) column addition of six addends involving the combination of any of the foregoing numbers; (10) making change and simple subtraction; (11) simple forms of fractions, as ½, ¼, etc.; (12) constructing and organizing store projects, labeling, and making price tags; and (13) estimating size of room and objects which must include the practical use of the ruler.

TABLE 12.—DAYS REQUIRED BY EACH CHILD TO COMPLETE HIGH-FIRST-GRADE ARITHMETIC

5	7	7	8	8	8	10	10	11	12	13	14
15	16	16	16	17	17	20	20	20	20	20	21
21	22	22	22	22	23	25	26	26	28	28	28
28	29	29	29	30	31	31	32	33	33	34	34
36	36	37	37	38	38	38	40	40	40	41	41
42	42	42	42	44	45	45	48	48	49	49	49
49	49	52	53	53	57	57	57	58	59	61	62
62	62	63	63	64	64	66	66	67	67	68	69
70	70	75	79	87	89	90	95	95	100	101	110
127	142	149	202								

Table 13 shows similar data for 114 children who completed the low-second-grade course of study in arithmetic: (1) use of the following combinations—6 and 4, 3 and 3, 4 and 4, 8 and 8, 3 and 5, 8 and 6; (2) social experiences of the first grade enlarged in the low and high-second grades; (3) Burk's *Bulletins*.

TABLE 13.—DAYS REQUIRED BY EACH CHILD TO COMPLETE LOW-SECOND-GRADE ARITHMETIC

1	5	7	7	8	11	12	14	14	17	17	18
18	19	20	20	21	22	23	23	23	24	25	26
26	27	27	28	29	29	29	29	29	30	31	31
32	32	32	33	33	33	33	34	34	34	34	34
35	35	36	36	37	37	39	40	40	41	41	42
44	45	45	46	47	47	48	48	49	50	50	50
50	51	52	54	54	55	59	59	60	60	63	64
68	70	75	77	78	80	85	85	88	90	97	99
103	103	103	105	106	112	114	121	121	127	128	133
133	133	137	145	146	211						

Table 14 shows similar data for 73 children who completed the following course of study in high-second-grade arithmetic: (1) complete all combinations in addition; (2) solve simple problems in involving these combinations; (3) add columns of six addends (Burk's *Bulletins*).

TABLE 14.—DAYS REQUIRED BY EACH CHILD TO COMPLETE HIGH-SECOND-GRADE ARITHMETIC

2	3	4	7	7	8	8	10	11	12	12	13
14	14	15	15	15	15	17	18	20	23	23	23
23	24	26	26	27	28	28	28	29	30	32	32
33	33	33	34	34	35	35	35	35	36	36	36
38	38	38	39	41	43	45	46	47	47	48	49
49	50	50	51	53	56	56	57	58	59	60	61

Comment by C. W. Washburne

Tables 7 to 14 are presented by Miss Ward and her collaborators without comment. The implications, however, are obvious.

There are no clear-cut ability groups. The children are distributed evenly in each subject and do not bunch appreciably at any one place. If an all-wise teacher had been able to predict each child's rate of progress—and no test will do that—and if the children had been ideally classified for work in each subject on the basis of ability in that subject, the heavy black lines which we have superimposed on the graph of actual progress (see Fig. 4) show how the ability-

groups would have been composed. Take low-first-grade reading, for example: If the fastest third of the children in beginning reading had been grouped, then taught at the rate of the median child of the group, it would have required 32 days for this group to have completed the course. The child who could have completed it in 4 days would have taken 8 times as long, the child who could have finished in six days would have wasted 26 days, and so on up the line. On the other hand, children who require from 33 to 50 days to master the work would have been forced forward at a rate inconsistent with their ability; the slowest of these would have received low marks, and inadequate training.

Take the children who fall on the two sides of the dividing line, between the fast and the middle groups: One child needs 50 days to complete the course and would be forced to do it in 32; the next child needs 52 days but must spend 64—the median time of the middle group. The two children have almost the same ability, but one must take double the time of the other. The discrepancies in the slow group are worst of all. Here the child who could complete the work in 70 days is classified with the one who needs 162 days, but both would be forced to do the work in 79 days. The slowest child of this group needs more than double the amount of time allotted him.

Of course, the San Francisco State Teachers College makes no attempt to classify pupils; each goes at his own rate. But their records show conclusively that children do not fall into homogeneous-ability groups and that even the best ability-grouping does not really fit schools to individual differences.

E. Data on Ability-Grouping from Iowa

By Ernest Horn
State University of Iowa, Iowa City, Iowa

Arguments for making adjustments to individual pupils have, in the main, been based on data showing differences in the status of children at a given time with regard to one or more traits or abilities. Investigations have clearly established the fact that children

in a typical class in a public school vary considerably in mental age, in physiological development, and in scores made on tests of special school abilities. Such data show that some adjustments to individual differences must be made. But even more convincing than these differences in status, significant as they are, are differences in *rates of progress*. For if pupils learned at equal rates, or if rates of progress correlated highly with status at the beginning of the learning period, the problem of individual differences could be solved by classification.

Beginning in 1915, the staff of the University Schools at the State University of Iowa has, in its pupil accounting, stressed particularly *differences in progress* among pupils, in addition to carefully recording differences in status. The data from these records show, in brief, that there are wide differences in rates of progress in each type of performance measured, that these differences are greatest when instruction is adjusted to individual needs, and that classification according to status at the beginning of a term is by no means a satisfactory basis for prognosticating the differences in progress during that term. Accordingly, we have come to recognize that, while for administrative reasons we classify students at the beginning of a term on the basis of their status in one or more abilities, such a classification only partially offsets the waste of time resulting from unequal rates of progress.

Limitation of space permits only a very brief review of the investigations of this problem. Most of the space will be given to a review of an investigation organized to validate the results published by the late Dr. Frederic Burk[8] of the San Francisco State Normal School.

This investigation was begun in 1916 by Jane Howarth,[9] at that time principal of the Perkins School for crippled children. After preliminary experiments in this school, Miss Howarth undertook an investigation of differences in the rates of progress of forty fifth-grade public school children in completing three exercise books

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[8] Burk, Frederic. *Individual Instruction*, Monograph C. San Francisco, State Printing Office, 1915.

[9] Howarth, Jane. *A Study in Individual Variation in Language Ability in a Fifth Grade of Forty Children.* Master's thesis, unpublished, State University of Iowa, 1918.

published by the San Francisco State Normal School: *Exercises in Language*, Nos. 42, 43, and 44. These books consist of lessons on twelve language elements as follows:

1. Periods and question marks
2. Dates without the year
3. Commas in a series
4. Commas as used to separate the name of a city from that of a state in which it is situated, as Lansing, Michigan
5. Possessives simple
6. Possessives advanced
7. Letter forms
8. Titles of relationship, when written with a small letter and when capitalized
9. Titles of offices, when written with a small letter and when capitalized
10. Quotations
11. Time of day
12. Section and direction, as south, written with a small letter when referring to a direction and with a capital when designating a section of the country

At the beginning of this experiment the Trabue completion test, Form B, was given along with a dictation test built especially to measure the initial ability of these forty children on the material they were about to study. The results of Miss Howarth's experiment seemed to justify the following conclusions:

1. That the variation among pupils in the time taken to complete such exercises is large enough to constitute a serious administrative problem.

2. That neither the Trabue test nor the dictation test, nor both tests taken in combination, would have afforded a satisfactory basis for classifying these pupils. The rates of accomplishment of individuals varied so greatly that only two of the forty children could have worked together with little or no waste. This is shown clearly in all of Miss Howarth's tables which bear on this point. Table 15, for children who made a score of 12 on the Trabue test, is representative.

3. That each pupil in the group, through the use of this individual instruction method, gained very materially in all of the abilities taught. The first test taken over the subject matter treated in

these books showed a median score of 55.6 percent, with a quartile deviation of 8.1. The scores made after the books had been completed gave a median of 90.7 percent, with a quartile deviation of 3.7.

TABLE 15.—NUMBER OF 30-MINUTE PERIODS TAKEN PER EXERCISE BOOK BY ELEVEN PUPILS ALL OF WHOM SCORED 12 IN THE PRELIMINARY TEST

Pupil Number	Preliminary Test Trabue	Bk. 1	Bk. 2	Bk. 3	Total
1	12	19	19	6	44
2	12	17	10	10	37
3	12	18	13	14	45
5	12	18	13	18	49
6	12	17	14	6	37
19	12	20	11	9	40
22	12	13	9	8	30
29	12	16	18	11	45
32	12	18	14	19	51
33	12	32	20	8	50
36	12	23	16	9	48

4. The results clearly substantiate the claims made by Dr. Burk as to the individual differences in progress, for the types of abilities represented in the experiment.

The conclusions which one would reach on the basis of the data offered by Dr. Burk and Miss Howarth are uniformly substantiated in every investigation of rates of progress which has been carried on in the University School. Two facts stand out in the writer's mind as deserving particular emphasis because of the clearness with which they contrast the problem of teaching with the problem of classifying students. The first is that any given individual is by no means uniform in his rates of progress. The second is that even among pupils who are progressing at approximately equal rates there are wide differences in the nature of the difficulties with which these pupils are confronted.

The lack of uniformity in the rates of progress of individuals. The situation shown by inequalities in status among the pupils in a class at the beginning of a term's work and inequalities in relative amounts accomplished by pupils during the term is complicated by

the fact that each individual varies in the rate at which he learns successive units of subject matter. In other words, each pupil works in spurts, having his 'off' days and his 'on' days. This is illustrated clearly in the experiment conducted by Miss Howarth. For example, two pupils, Numbers 2 and 6, finished Exercise Book No. 42 in 17 periods each. However, in finishing book No. 43 Pupil 2 required 10 periods, while Pupil 6 required 14 periods. On the other hand, in finishing Book No. 44, Pupil 2 required 10 periods and Pupil 6 required 6 periods. In other words, Pupil 6 required 40 percent more time to complete Book No. 43 than Pupil 2, but 40 percent less time to complete Book No. 44. It is clear that although each pupil required 37 periods to finish the three exercise books, they did not progress evenly. Had they been required to stay together day by day, each would have taken not fewer than 45 periods to complete the work.

Similar data could be given almost without limit to show the need of making such adjustments as will enable us to utilize the spurt periods of each pupil.

Differences in the nature of the difficulties which retard progress. Not only do pupils progress at different rates and unevenly, but the difficulties which account for these differences vary with each individual. This is shown quite clearly by data taken from an experiment in spelling. A sixth-grade class was required to learn to perfection Column N of the Ayres Spelling Scale. The initial test showed that pupils were not only unequal in the percentage of errors made, but that pupils with the same percentage scores missed different words. Pupil 1, for example, missed the words *use, yesterday, among, been, subject,* and *doctor.* Pupil 11 missed *himself, copy, been, among, there,* and *something.* Other differences were noted. Pupil 10 missed two words on the initial tests, *among* and *doctor,* learned both of them immediately, spelled them correctly on the next three consecutive tests, and on the fifth test misspelled *doctor.* Pupil 13 missed none of the words in the column on the first four tests, but missed *dozen* and *fifth* on the fifth and last test. These are mere samples of a large amount of data which show uniformly that the difficulties which retard the progress of one individual in a class are not necessarily the difficulties which retard the

progress of another pupil, of approximately the same ability, in that class.

At present, satisfactory data are available only for spelling, arithmetic, handwriting, reading, and the mechanical phases of composition, because of the greater ease with which progress in these subjects can be measured. In the case of every experiment in each of these fields the data consistently bear out the following conclusions for the typical public school class:

1. There are wide differences in the status of abilities in each of these subjects at the beginning of a year.

2. There are great inequalities in rates of progress, not only among pupils who have different abilities at the beginning of a learning period, but also among pupils of the same initial ability. Even pupils who have made equal progress for a given period of time show considerable differences in rates of accomplishment in subsequent periods.

3. There are variations or spurts in the rate of progress of a given pupil.

4. There are significant variations in the nature of the difficulties which retard the progress of the various members of the class.

Preliminary investigations seem to indicate that these conclusions are also valid for more complicated subjects such as geography, appreciation of literature, history, and hygiene.

If these conclusions are sound, it seems clear that the problem of individual differences cannot be solved by *classification* alone. The largest part of the solution must be accomplished through reaching the *individual* through *instruction.*

F. Summary of Data on Ability-Grouping

The data brought to bear on the efficacy of ability-grouping fall under two heads: in Detroit and Los Angeles the results of careful classification into ability groups have been studied and have yielded important conclusions; in Winnetka, at the San Francisco State Teachers' College, and at the University of Iowa, children have been allowed to progress as individuals, then their records have been studied to see whether the children could have been classified in fairly homogeneous ability-groups without serious loss.

The Detroit studies show that children at each level of intelligence have a very wide range of achievement and very different rates of progress in any specific skill. They show, further, that excellence in one subject does not prognosticate excellence in others —in 80 percent of the cases studied, in all ability groups, each child was found at the end of a semester's instruction to be at three or four, out of a possible five, different levels of achievement in the five subjects measured; only 8 percent of the children maintained a constant position in all subjects.

The Los Angeles data from physical, psychological, and academic measurements of children classified according to ability, show that the ability groups overlap far more than they differ. The range in each ability group is many times as great as the difference between its central tendency and that of the next ability-group.

The Winnetka results exactly confirm those from Los Angeles. In Los Angeles children were taught in ability-groups; in Winnetka, individually. Yet in both cases the same sort of distribution was found. The range in achievement among the bright children or average children or slow children is greater than the difference between the median achievement of any two groups. Nearly half of the 'gifted' children in Winnetka made less rapid progress than the top fourth of the middle group, and the top fourth of the low group actually excelled in progress the bottom fourth of the 'gifted' group. Had the children been classified into ability-groups, large numbers would have been held to standards above or below their ability. The Winnetka study of individuals within any one group, confirms the Detroit demonstration that a child may excel in one subject and do poor work in another, while children of identical I. Q. may differ widely in progress.

The San Francisco State Teachers' College results bring out the same lack of homogeneity among children. They show that children do not bunch at any ability levels, but vary gradually from very fast to very slow; any attempt at ability-grouping would simply do on a somewhat smaller scale what ordinary class instruction does on a larger scale—waste the time of the quick child and force the slow child forward at a rate too fast for thoroughness.

The University of Iowa studies confirm all these statements. They show that classification according to the child's status at the begin-

ning of a term is by no means a satisfactory basis for prognosticating the difference in progress during that time. Classification only partly offsets the waste of time resulting from unequal rates of progress. Only two out of forty children were found who could have worked together with little or no waste. Individual children are by no means uniform in their own rates of progress. Even among pupils who are progressing at approximately equal rates there are wide differences in the nature of the difficulties with which they are confronted. Pupils who have even made equal progress for a given period show considerable difference of progress in subsequent periods.

All these data, gathered by five groups of investigators working independently, point to this conclusion: children do not fall into natural ability-groups and cannot be classified so as to yield homogeneous groupings; groups which appear relatively homogeneous at the time of classification soon vary more within themselves than they do from each other; different types and amounts of instruction are required by different children within each group; ability-grouping does not solve the problem of adjusting schools to individual differences.

II. DOES INDIVIDUAL WORK SAVE TIME

The claim oftenest made for individual instruction is that it saves time. The actual statistics gathered on this subject seem to indicate that this is true for many individuals, but not always for the median, or average, child. Since curricula in traditional schools are supposed to fit the average child, it is not surprising that the child of average ability in any subject should go at about the same rate under individual instruction as he would under class instruction. For the child of ability above average, the data are unequivocal; he certainly saves time. The child just below average, who might have been promoted each year on a barely passing mark, probably loses time under individual instruction; he must stick at each job till he masters it, instead of sliding through on the lowest passing grade. The very slow children, who would have to repeat grades under the traditional system, save time, again, by individual work.

Many of the data which lead to these conclusions are presented under other heads in this section. Under the head of ability-groupings, just discussed, for example, are tables and graphs that bring out clearly the time saved to the brighter children. Miss Sullivan's graphs of reading achievement after a semester training in Los Angeles, the Winnetka progress distribution graphs, the tables from the San Francisco State Teachers' College showing the number of days required by different children to complete a grade's work in reading and arithmetic, and Horn's data on the number of periods acquired by different children to go through a language exercise book, all show unmistakably that much time is saved for the faster pupils. Under the head of provision for social and self-expressive activities, below, the Winnetka results show much time cleared each day for all children for group and creative work; this would certainly indicate that some time is saved for all children, since these same schools are shown to be doing efficient academic work in a smaller portion of each day than is customary in class-method schools. As to the very slow children, the data on decreasing retardation, given in the fifth subdivision of this section, show that there is less retardation under individual instruction than under the class lock-step, proving that time is saved for many who would ordinarily be repeaters.

In addition to these data, there are certain direct studies of the

particular question of time-saving. The San Francisco State Teachers' College presents valuable material in this connection. The Winnetka data confirm those from San Francisco. McCrory analyses children's progress in a single subject, spelling, to determine time saved; Courtis analyses the progress of a small group of children; while Sutherland summarizes the records of a thousand children learning particular subjects on an individual basis.

A. Time Saving in San Francisco State Teachers' College

By Mary A. Ward, Grace E. Carter, Hilda M. Holmes, and Cecilia Anderson

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A study of the record of 130 pupils graduating from our school during the last two years shows some interesting facts in regard to the saving of time for the pupils instructed under the individual plan.

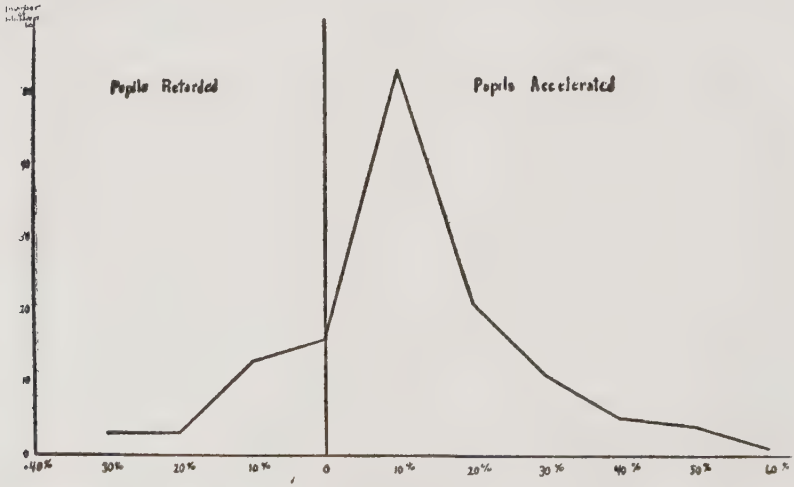

Figure 5.—Distribution of Pupils' Progress at the San Francisco State Teachers' College

Read this graph as follows: Beginning at the left, and following the solid line, 3 children lost ground at the rate of 30 percent, *i.e.*, needed 3 months extra to do ten months' work; 3 lost at the rate of 20 percent; 13 at the rate of 10 percent; 16 made exactly normal progress; 53 gained 10 percent, *i.e.*, completed 10 months' work in 9 months; 21 gained 20 percent, and so on to the extreme right, which shows one child gaining 60 percent, or finishing 10 months' work in 4 months.

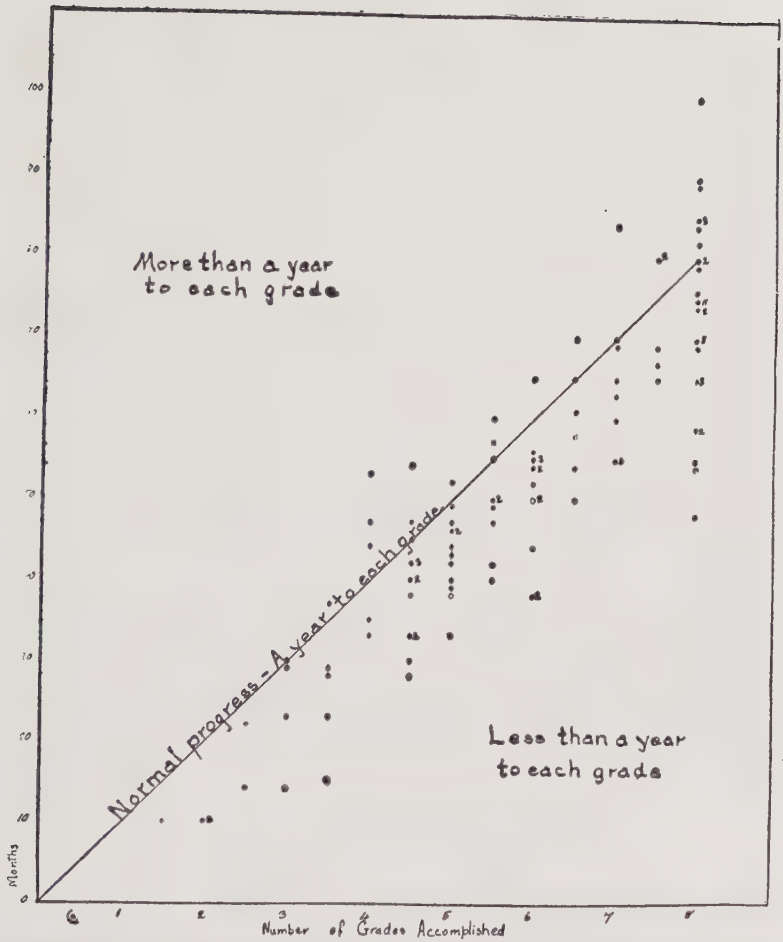

FIGURE 6.—DIFFERENCES IN TIME TAKEN BY INDIVIDUAL PUPILS TO DO A NUMBER OF GRADES OF WORK AT THE SAN FRANCISCO STATE TEACHERS' COLLEGE

Each dot on the diagonal line represents one or more children who progressed exactly at the rate of a grade a year. All dots above the diagonal line represent children who required more than a year to complete each grade. Those below the diagonal line represent children who required less than a year to complete each grade. The lower left hand dot shows the child who completed 1½ grade's work in ten months (one year). The next dot shows two children completing two grades' work in ten months. The next dot, one child completing 2½ grades' work in fourteen months, and so on. One hundred children show saving of time; seven children show neither gain nor loss; twenty-three children show loss of time. One grade represents ten months' work.

It will be helpful, in interpreting the graphs (Figs. 5 and 6) and in making comparisons, to keep in mind the following conditions under which our school operates:

1. All teaching is done by student teachers under the supervision of the faculty.

2. The school day is divided into two sections with two teachers in each section. Changes are made in the assignments of these four teachers every twelve weeks.

3. Our program provides for a short school day. The actual amount of time for work in the first and second grades is 2 hours, 45 minutes, per day. The actual amount of time for work in the third and fourth grades is 3½ hours per day. The actual amount of time for work in the grammar grades is 4 hours per day.

4. As the records show, children may enter the school at any time during the year with no loss of time due to transfer. After an inventory test, work is planned to suit the needs of the individual. Retardation in one subject does not affect progress in other subjects.

5. In the grammar grades only three hours a day are spent on the regular school curriculum. The rest of the time is devoted to music, art, science, manual arts, domestic arts, and supervised play.

In spite of the handicaps of these conditions and in spite of the enriched curriculum, the graphs show a saving of school time to 100 graduates out of 130 who have worked under the individual system.

B. Time Saving at Winnetka

By Carleton W. Washburne

The Winnetka results on time saved are very similar to those of the San Francisco State Teachers' College, although the percent of children saving time is not so great. Seventy-seven percent of the San Francisco State Teachers' College children saved time as against 50 percent of those in Winnetka. Eighteen percent took more than a year to a grade in San Francisco, and 20 percent in Winnetka. The Winnetka results are shown graphically in Figs. 7 and 8.[10]

[10] Complete distribution curves classified by intelligence levels are reproduced elsewhere in this *Yearbook*. See Fig. 3.

These data result from a study of the progress of 389 pupils over a period of two years, each child's progress in arithmetic, reading, language, history-geography, and writing-spelling being averaged. The median intelligence quotient of Winnetka children on the National Intelligence Test was 107, the range, from 60 to 190.

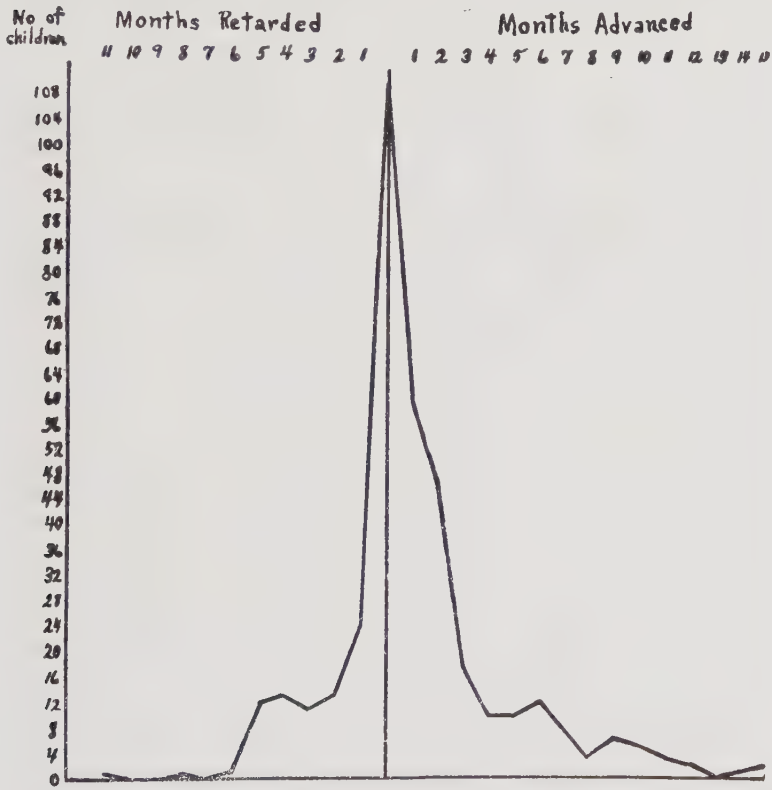

FIGURE 7.—PROGRESS DISTRIBUTION IN THE WINNETKA SCHOOLS

This shows the number of children who, at the end of two years of individual work, had not yet completed two grades of work, had completed two grades, or had completed more than two grades. Read the chart as follows: One child was 11 months retarded, *i.e.*, had only done 7 months' work in two years. One child was 8 months retarded, *i.e.*, lacked 8 months' work of having completed two grades, and so on to the mode, which shows 110 children exactly normal, having completed two grades in two years. To the right of this mode come 60 children who are one month advanced, *i.e.*, who had completed two grades of work and done a month's work beyond, at the end of two years, and so on.

The 187 children (50 percent) who saved time, saved a total of 655 months in two years, or an average of 1.75 months per child per year. The greatest saving was 15 months in two years—in other words one child did over 3½ grades' work in two years.

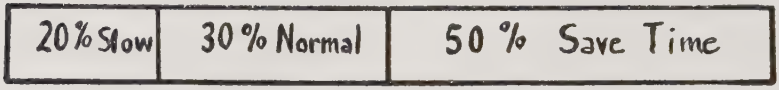

FIGURE 8.—SUMMARY OF FIGURE 7

Twenty percent of the children made less than two grades in two years, 30 percent made exactly two grades in two years, and 50 percent made more than two grades in two years.

The 76 children (20 percent) who took more than two years to do two grades' work were altogether 220 months behind, representing an average loss of 1.45 months per child per year. These children did not have to repeat grades; many of them therefore really saved time. And each one stayed on each job till he mastered it.

The Winnetka results, then, show that individual instruction does save time for a large percentage of children.

C. TIME SAVING THROUGH INDIVIDUAL WORK IN SPELLING

By JAS. L. MCCRORY

Assistant Superintendent of Schools, Omaha, Nebraska

The writer conducted an experiment in three different grades, fourth, fifth, and sixth, in the Experimental School at the University of Iowa, the results of which seem to indicate a waste of about seventy-five percent of the pupil's time which is usually devoted to spelling. As a preliminary instruction program, each child was taught how to learn to spell by the use of nine spelling rules as follows:

1. The first step in learning to spell a word is to pronounce it correctly. If you do not know how to pronounce a word, look it up in the dictionary. When you are certain that you know how the word is pronounced, pronounce it, enunciating each syllable distinctly and looking closely at each syllable as you say it.

2. Close your eyes and try to recall how the word looks, syllable by syllable, as you pronounce it in a whisper. In pronouncing the word be sure to enunciate the syllables carefully.

3. Open your eyes to make sure that you were able to recall the correct spelling.

4. Look at the word again, enunciating the syllables distinctly.

5. Recall again, with closed eyes, how the word looked.

6. Check again with the correct form. This recall, as in 2 and 5, should be repeated at least three times, and oftener if you have difficulty in recalling the correct form of the word.

7. When you feel sure that you have learned the word, write it without looking at the book, and then check with the correct form.

8. Repeat this two or three times without looking either at the book or at your previous attempts.

9. If you miss the word on either of these trials, you should copy it in your spelling notebook, since it probably is especially difficult for you.

Briefly, the plan for the experiment was as follows: One day a list of fifty words was pronounced to the class. The words were taken from the Iowa Spelling Scale. The standard difficulty for the grade was known. The maximal amount of time used in any class for any day was fifteen minutes. The papers were taken up, corrected, and the words spelled incorrectly were noted. The next day the pupils studied only the words they missed and corrected them.

The time for learning was carefully recorded by the administrator. Each child was required to have three perfect spellings, in order to eliminate guessing.

The same list of words was given to Grades IV, V, and VI. There were 53 pupils in all three grades, distributed as follows: fourth grade, 19; fifth grade, 17; and sixth grade, 17. The chronological ages ranged as follows: fourth grade, seven years, seven months, to twelve years, three months; fifth grade, eight years to ten years, ten months; and sixth grade, ten years to thirteen years, four months. The range in intelligence quotients was as follows: fourth grade, 86 to 142; fifth grade, 83 to 140; and sixth grade, 72 to 146. The foregoing figures indicate that the group of children was a normal group, such as would be found in any elementary school.

Since we are interested in this article especially in individual differences, may I call your attention to the first list of fifty words? In the fourth grade one pupil missed no words in the three attempts and therefore took no time to study. Another pupil in the same grade missed 177 words and took 126 minutes to study. These are both pupils in the same class, who, by using the old-fashioned method, would have been forced to use the same amount of time for

their spelling. In the fifth grade, in the same list as used in the fourth grade, one pupil missed one word and learned it in one minute, while another missed 28 words and used 26 minutes to learn them. In the sixth grade, on the same list, one pupil missed one word and learned it in one minute, while another missed 21 words and took 17 minutes to learn them.

In this list of fifty words the pupil in the fourth grade spelled better than anyone in the fifth or sixth grade. On the whole experiment, of 300 words, she did better than fifty percent of the sixth grade. Is it fair to this girl to force her to spend the same time on her spelling as the rest of her class?

Some pupils in the sixth grade completed 300 words and spelled them correctly on three different days in 18 days. At that rate, those pupils could complete a normal year's work in 30 days and provide for two reviews, or three perfect spellings on each word. Of course, these pupils made the best record. The pupil who made the poorest record did not spell the first list of 50 words correctly once, but kept missing words in a sort of round-robin order.

As the result of this investigation, as well as others that have been carried on in the same field, it would seem there is a real opportunity for economy of time in spelling. In the writer's opinion this can be accomplished only through the use of individual methods.

D. Time Saving at Detroit

By Stuart A. Courtis
Detroit Teachers' College

Figure 9 presents a vivid picture of exactly what happens when drill work is completely individualized and of how time is saved. In the graph the rectangles represent the work of twenty eighth-grade children in the practice tests in arithmetic. The base of each rectangle represents the number of lessons completed (maximum 24) and the height of the rectangle represents the number of days in school (58). The first boy finished all the lessons successfully in 37 days and during the remainder of the experimental period (21 days) was excused from drill and devoted his time to other forms of school work. The last boy completed but 7 lessons in 49 days and

was not absent. If every child in the class had taken drill every one of the 58 days, the total number of drill exercises would have been 1160. Actually, through late entrance and absence, there were but 1082 [12] possible drill exercises. Ten children completed their drill exercises and were excused from drill, saving a total of 146 days, or 13 percent of the total time. Yet 50 percent of the children achieved the goal set and the remaining 50 percent completed the work they did do thoroughly. The last three children, who entered late, created

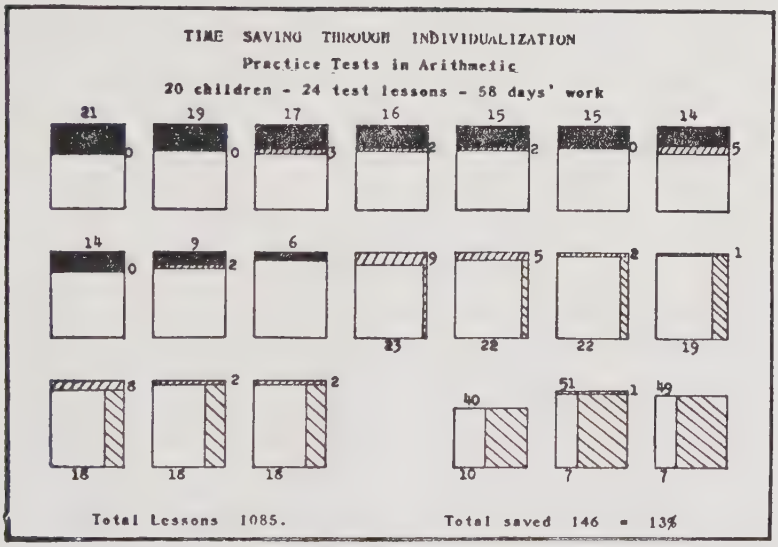

FIGURE 9.—TIME SAVING IN ARITHMETIC BY INDIVIDUALIZATION OF DRILL

Read the diagram as follows: Each rectangle represents one child's work. If a rectangle were all white it would indicate that the child had completed the series of 24 lessons (plotted on the base line) in 58 days (plotted vertically). Unfinished lessons are cross hatched at the right; days absent at the top; days excused are shown in black. The numbers at the top of the rectangles in black represent the days excused; at the right, the days absent; below, the number of lessons finished. Thus boy A (upper left) was excused from drill 21 days; that is, he finished the 24 lessons in 37 days and was not absent. Boy B (upper right) was excused 14 days and absent 5 days, but finished all the lessons. Boy C (lower left) finished 18 lessons and was absent 8 days. Boy D (lower right) entered late and was in school but 49 days. He was not absent and finished seven lessons.

[12] Given erroneously as 1085 in Fig. 9.—*Editor.*

no disturbance in the class organization, but, like the rest, began at the precise point drill was needed, and made progress at their own rate.

These results are from one of the very early tabulations of the winter in 1912 (or 1913) while working in the Liggett School, Detroit. The other data in connection with the experiment have been lost. The average scores of classes using the individualized material were invariably higher than results secured previously, so that it is safe to assume that in this case also the average score of the class is higher than it would otherwise have been. Similiar results on a large scale have been secured many times, but none is available at this writing. Individualized instruction, in connection with limitation of training, saves time both by freeing the able children from overtraining and by enabling the handicapped child to go slowly enough to complete thoroughly the work he undertakes.

E. Time Saving at Los Angeles

By A. H. Sutherland

The pupil who works under the conditions outlined for Adjustment Rooms in Los Angeles, proceeds 3.36 times as fast, on the average, as does the pupil in the regular grades.

The year is 40 weeks. The work, as outlined in the course of study, is divided arbitrarily into 40 parts, thus giving a unit of one week's work for one week's time. This subject matter, together with certain ideals for its practical application, is analyzed; practice material is prepared on the basis of this analysis. The resulting lessons, arranged with instructions which will call for the use of certain abilities, are printed and are in the file in each room for the pupil to use. Tests by means of which the pupil can test himself, are in the hands of the teacher to be given out as called for.

A check of 1,000 children, reported by the teachers from the individual progress cards at the end of the year, and averaged in the central office, showed that the development of abilities which were concerned in this assigned work proceeded 3.36 times as fast as those abilities are 'assumed' to develop, and are permitted to develop in the regular grade.

This, however, is the record of pupils who on some basis are considered misfit pupils.

III. DOES INDIVIDUAL WORK INCREASE OR DECREASE SOCIALIZED AND SELF-EXPRESSIVE ACTIVITIES?

One fear, often expressed, is that individual work will be purely mechanical; that children will become individualists without social experience; that the school will become a factory, grinding out the three R's in a dead, routine fashion.

The actual experience of schools which have individual instruction would seem to make these fears groundless.

Miss Mackinder's school in London is thoroughly social and alive in its atmosphere; the children are unusually happy and spontaneous. The Frederic Burk School of the San Francisco State Teachers' College, as shown in other parts of this *Yearbook,* has always devoted much time to dramatics, discussions, shop, science, art, and music. And the Winnetka Schools present statistical evidence of an unusual amount of emphasis on group and creative activities.

A. Socialized Activities in the Marlborough Infants' School

By Jessie Mackinder

The actual amount of time usually devoted in this school to socialized activities (such as games, mass and class singing, recitation of poems learned, the telling of stories) and to self-expressive activities (including drawing, clay modelling, rhythmic work) is about the same as in most London schools. But, whereas the teaching of reading, composition, writing, and arithmetic was, in the past, entirely accomplished in class lessons, these subjects have become perhaps the most socialized of all.

The children very often compare their own work and the records of it with those of other children in the class; so these individualized subjects have been made additional means of intercourse between individuals, whereas, in the old days, no child was allowed to speak to his neighbor and had but little chance of speaking to his teacher concerning these subjects.

We often find three or four children with copies of the same storybook reading together. Sometimes one child discovers a very interesting passage and will read it to another. Lively discussions are often heard concerning such passages. Contrast this with schools where

class reading is the order of the day, and the only voice to be heard is that of the one reader, spelling out the words of the passage everyone is following.

The definiteness and self-instructive nature of individual work and materials, make it possible to allow and encourage informality and sociability among the children who are working with them.

B. Socialized and Self-expressive Activities at Winnetka

By C. W. Washburne

To determine what part of the school day, under the Winnetka technique of individual work, is given to socialized and self-expressive activities, the research worker under the Commonwealth Fund grant spent days in the third, fourth, fifth, and sixth grades in Winnetka, six days in the corresponding grades of a good modern public school system (School I) near Winnetka, where the usual class methods are in operation, and six or seven days each in a progressive experimental school (School II) nationally known for its socialized work, and in the laboratory school of a large university (School III).

The visits were made in the following order: first, a visit to a third and sixth grade in each school; during the same month another visit to these same rooms, reversing the order of the visits; two months later a visit to a fourth-grade room in each of the four schools, and two months later a visit to a fifth-grade room in each of the schools studied.

In order to get results which were typical, the teachers were not told beforehand of the days when visits were to be made.

During each of these visits, the research worker stayed with the class from the beginning to the end of the school day. A record was kept of the specific activity engaged in by the majority of the class for every minute of the day, as far as this was possible. A slight disturbance was not recorded, since the main purpose of this study was to record child activities rather than class attention. Recess periods were counted as part of the school day in all schools.

After the visits, the activities listed were classified under various headings as given below:

1. Individual Work

a. *Individual Study.* During a period of individual study each child is reading his own book, working on an assignment of his own, or correcting his own work, which is not the same as the work of the rest of the class.

2. Class Work

a. *Class Study.* During a period of class study, each child is studying a lesson assigned to all.

b. *Class Drill.* Under this head come all quick drills or games for the purpose of increasing speed in applying knowledge already gained. Also under this head come writing exercises directed by the teacher.

c. *Class Recitation.* Oral recitation periods are periods when children are giving back to the teacher information gained through study. These recitations may or may not be on subjects in which the children are tested or graded.

d. *Class Recitation (written).* Under written recitation come all lessons in which all the children are writing answers to the same assigned questions in any subject.

e. *Listening to Instruction.* Under this head come periods when the children are listening to information given by the teacher.

3. Group and Creative Activities

a. *Socialized Activities.* This heading includes all activities in which the whole class take part—often prompted, but not directed, by the teacher.

Examples: The children are having a business meeting; they are dramatizing a play; they are playing games in teams, either in the gymnasium or on the playground; they are building a snow house; they are having a literary program prepared by the class.

b. *Self-Expressive Activities.* Self-expressive activities are those activities which give the children an opportunity to express their own ideas. Articles to be made or stories to be written are often suggested by the teacher or other children, but in the working out of these stories or articles, each child expresses something of himself.

Examples: Each child is writing an original poem; he is making an article of his own choice; he is showing the dramatic teacher how he would look if he were the cold North Wind; each child is playing by himself or in groups of two or three (a great many

recess periods have been called "self-expressive" because free play has been counted as such); each child is drawing a picture of his own choice, working out his mat design or writing his own story.

c. *Directed Group Activities.* Under this head come activities in which the whole class take part—but under the detailed direction of the teacher.

Examples: The children are singing songs together; they are all doing rhythms together; they are doing physical exercises; they are saying a prayer in unison; they are copying pictures from their books.

d. *Listening to Reports.* Book reports on books chosen by the children, reports on topics assigned to an individual child, a recitation of a poem by one child (his own choice), or an account of an experience of one of the children would be called a child's report. During a period classed under this head, the majority of the class are listening.

e. *Recreation.* Examples: The children are visiting with each other; they are taking a sleigh ride.

f. *Entertainment.* Occasionally there is a period given over to the entertainment of the children by grown-ups or by the children in other classes.

Examples: The children are listening to plays in assembly; they are listening as the teacher entertains them by reading a story.

4. Miscellaneous

a. *Taking Directions.* During a period classed as "Taking Directions" the children are listening to directions on assignments, on school policies, or on any outside matters that may come up.

b. *Miscellaneous.* All other uses of time are classed as "Miscellaneous."

Examples: The children are getting papers, books, pencils, etc., ready for work; they are passing to and from classes; they are drinking milk; they are answering the roll call; they are changing their shoes; they are resting at their seats; they are listening as they are being disciplined.

All the activities carried on in each room visited were classified under one of the above heads. Table 16 shows the percent of time spent in each type of activity in each of the four schools.

Table 16 is also summarized graphically in Figure 10.

TABLE 16.—PERCENTAGES OF THE SCHOOL DAY GIVEN TO VARIOUS TYPES OF ACTIVITY IN WINNETKA AND THREE OTHER SCHOOLS

	I	II					III						IV	
	a	a	b	c	d	e	a	b	c	d	e	f	a	b
Schools	Individual Study	Class Study	Class Drill	Oral Recitation	Written Recitation	Instruction	Social	Expressive	Directed	Reports	Recreation	Entertainment	Taking Directions	Miscellaneous
W.	31.5	1.2	2.6	3.2	0	4.2	18.8	11.8	5	4	1.5	.6	3.6	11.8
I	6.3	17.6	7.5	20.5	4	4.3	2.5	7.8	9.2	.8	.3	0	3.8	15.2
II	8.5	9.6	.6	16.6	.5	11.6	12.8	8.6	7.5	.3	.6	4.8	3.5	14
III	13	14.3	1.8	10.3	2	3.8	9.8	12.5	10.2	1.8	.5	.3	5	14.5
	Ind. Work	Class Work					Group and Creative Activities						Misc.	
W.	31.5	11.2					41.7						15.4	
I	6.3	53.9					20.6						19.0	
II	8.5	38.9					34.6						17.5	
III	13.0	32.2					35.1						19.5	

From these data it would appear that individual instruction and progress in the common essentials, as carried out in Winnetka, leaves an unusually large amount of time for socialized and self-expressive activities of various kinds.

FIGURE 10.—DISTRIBUTION OF TIME IN WINNETKA, AS COMPARED WITH THREE SCHOOLS USING THE CLASS METHOD

School I is another public school system; School II is a nationally known experimental private school, specializing in group and creative activities; School III is the laboratory school of a large university. Note that while Winnetka has the largest proportion of time devoted to individual studies (32 percent), it also has the largest proportion of time devoted to group and creative activities (42 percent).

IV. DOES INDIVIDUAL WORK PUT CHILDREN THROUGH SCHOOL TOO FAST?

Because of the time saving element in individual work, fear has often been expressed that children will complete their elementary school work at too young an age and enter high school and college when too immature. Data on the Winnetka schools indicate that this danger (if it is a danger) can readily be avoided.

Results of an Age-Grade Census at Winnetka

By Carleton W. Washburne

An age-grade census of the Winnetka schools in comparison with those of the three surrounding and similar suburbs, and with that of a university laboratory school, does not show an extraordinary amount of acceleration in Winnetka. This is indicated in Table 17 and Figure 11.

Table 17.—Age-Grade Distribution at Winnetka Compared with Four Other Schools

	Percent Retarded				Percent Advanced		
	Over 2 yrs.	Over 1 yr. not over 2	1 yr. & less	Percent Normal	1 yr. & less	Over 1 yr. not over 2	Over 2 yrs.
School I	0.5	3.0	11.0	51.0	31.0	2.7	0.2
School III	0.4	1.8	20.0	52.4	25.0	0.4	0.0
School IV	1.0	6.0	22.0	53.0	18.0	0.5	0.0
School V	2.2	4.8	16.0	44.8	30.7	1.0	0.0
Average	1.0	3.9	17.3	50.3	26.2	1.1	.05
Winnetka	0.4	2.4	11.6	55.7	26.5	3.0	.01

From these it appears that only 29.51 percent of Winnetka are under-age, as compared with 27.35 percent in the average of the other schools—a trivial difference; while the percent of 'normal' children, *i. e.*, those who are 'at age,' or who have apparently made a grade a year through school, is distinctly above the average in Winnetka.

These data do not quite tally with the study of progress in Winnetka given on another page. That study considered actual rate of progress over a period of two years, and included only children who

had been in Winnetka at least two years. It took no account of entering age, or of additional time a child might deliberately take, doing electives and special courses, in the junior high school. It showed that individual work in the common essentials saved time for many children. It did not show that the time saved on the common essentials is often used for special courses that fit each child's needs or interests.

There is a definite effort in Winnetka to keep children in the seventh and eighth grades of the junior high school until they are

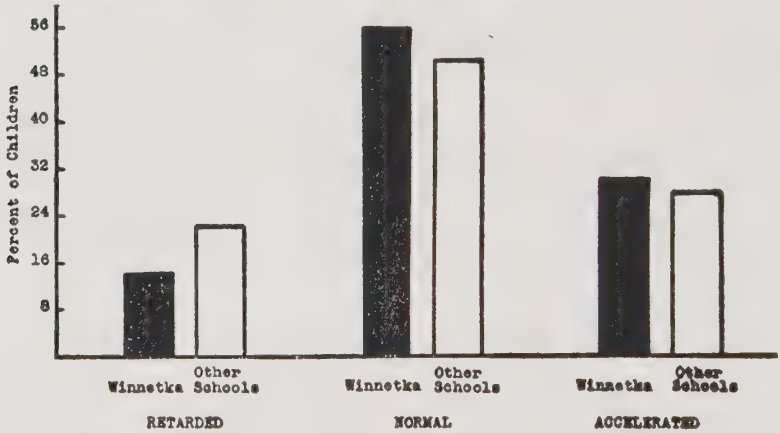

FIGURE 11.—AGE-GRADE CENSUS OF WINNETKA UNDER INDIVIDUAL INSTRUCTION COMPARED WITH THE AVERAGE OF FOUR OTHERWISE SIMILAR SCHOOLS USING CLASS METHODS

Note the lower percentage retarded, the higher percentage of children who are in normal grade for their age, and especially the fact that there are not many more children in Winnetka who are young for their grade than there are in the other schools.

mature enough for the senior high school. This retention is made feasible by offering a wide range of special and elective courses—some thirty such courses were offered on September 1, 1924; and several young children who had completed all required work the preceding June remained for a postgraduate year.

The median age of eighth-grade graduates from Winnetka in June 1924, was thirteen years and eleven months.

Individual work need not, in the light of these data, push children through school too fast.

V. DOES INDIVIDUAL WORK DECREASE RETARDATION?

One of the greatest single reasons for individual progress in schools is the large number of repeaters who clog schools everywhere, and who go out into life with a sense of failure. The percentage of over-age children is an index of the number of repeaters.

Under such plans of individual work as that used in Winnetka, failure and grade repetition become impossible. A child may need more than a year to do a grade's work; so there may be some over-

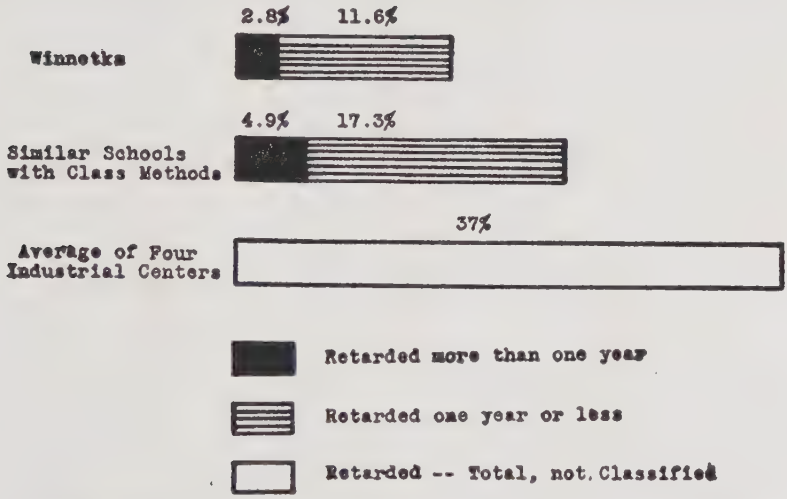

FIGURE 12.—REDUCTION OF RETARDATION BY INDIVIDUAL INSTRUCTION IN THE WINNETKA SCHOOLS

Note particularly the fact that the proportion of children retarded over a year is not much over half as great in Winnetka as it is in similar schools using class methods. The comparison with the average of four industrial centers is not quite fair, since the social composition of Winnetka is superior to these. The comparison to similar schools is a comparison with schools of equal or superior social composition to that of Winnetka and is entirely valid.

age children in an individualized school system; but they will be less over-age than as if they had had to repeat their grade's work instead of merely having to complete it. These theoretical considerations are borne out by the data from the Winnetka schools.

The age-grade census, referred to in the preceding section, by which Winnetka's children are compared with those of similar

suburbs and a university laboratory school, shows that these other schools, on the average, have half again as much retardation as Winnetka. The percentage of over-age children in Winnetka is only 14.4 as against 22.2 for the other schools, of similar social composition, and as against 35 to 40 for many industrial centers. This is shown graphically in Fig. 12.

Of the 14.4 percent retarded in Winnetka, 11.6 percent are from a day to a year over-age, and only 2.8 percent more than a year over-age. It would appear, therefore, that individual work and progress not only eliminates "failures" and "repeaters," but greatly mitigates over-ageness.

VI. IS INDIVIDUAL INSTRUCTION MORE OR IS IT LESS EFFECTIVE THAN CLASS INSTRUCTION IN TEACHING SCHOOL SUBJECTS?

Time could be saved and retardation decreased by the simple expedient of lowering standards. It is important to know whether individual instruction results in poorer work on the part of the child than does regular class instruction. Several studies in this connection have been carefully made and all indicate that individual instruction gives results at least as good as, and usually much better than, class instruction. Miss Mackinder's data are meager, but very interesting. Courtis presents a mass of convincing data, and the survey of the Winnetka Schools gives clear evidence that individual instruction in tool subjects is efficient.

A. Data from London

By Jessie Mackinder
Headmistress, Marlborough Infants' School, L.C.C., London

Since the fundamentals of a child's progress in the Senior schools are ability in reading and arithmetic, these two subjects were tested as described below.

The tests used were those made by Dr. Ballard and are to be found on pages 136 and 187 of his book, *Mental Tests*, published by Hodder and Stoughton, Warwick Lane, London, England, and also set out in *The New Examiner*, by the same writer.

By these tests the ability of every child in reading and in mental arithmetic was tested individually and in isolation.

1. The Reading Test

The test was explained to the child, and, using a stop watch, the examiner asked the child to read as many of the words as possible as fast as he could. If he did not know a word he was allowed five seconds to consider it. Then he was prompted and told to proceed, and that particular word was counted an error.

It is agreed that, alone, this test is not a measurement of the child's ability to obtain information from the printed page, but a

child cannot gain that proficiency in the art of reading until he has considerable mastery of the purely mechanical part of the process. Young children gain fluency in reading by reading a large number of easy stories for the interest alone. So this test of speed gives a very good indication of the child's power of comprehension. If he did not comprehend enough of the meaning of a story to hold his interest, he would not read at all.

Ballard's One-Minute Reading Test

is me on at by so as an it or be
to as he of in go up am if no we
my ox do the and for but him
are can she dog let you not was
out try see mix cat now boy saw
hit met top run man pet lot get
did van bad red cap bee lit pin
had ran pen nut big old yet rob
gun leg fun lip new fog has sit
sly wig mud box ink sat end cut
pay fed who six lad wet dry cow
his peg tin say cat any far set had
kid pup fox ask egg cab ill use jam
all pit got sad tea sky one yes fur
act toe her our ten arm rock gone feel
that rich till long flat this part foot
made upon came mile back sand time
said then wall into were done walk
much loss seem went with come

The following norms were obtained by testing the children of 49 schools in London:

Age in Years	6	7	8	9	10	14
Boys' Score	13	33	53	72	85	115
Girls' Score	15	38	58	75	88	122

These norms were obtained when the large majority of children were taught by the whole-class method about 10 years ago.

When the children who had learned on entirely individual methods were tested, the following results were obtained, this year:

Age	6 yrs. 6 mos.	7 yrs. 4 mos.
Boys' Score	54	76
Girls' Score	61	77

These results are shown graphically in Figure 13.

The power of gaining information from a book was tested as follows: Every child read alone, without help, two or three pages from a simple history or geography reader which he had not seen before. Ten minutes was allowed for the reading. The children knew that they would be expected to read and answer in writing five questions on the matter read.

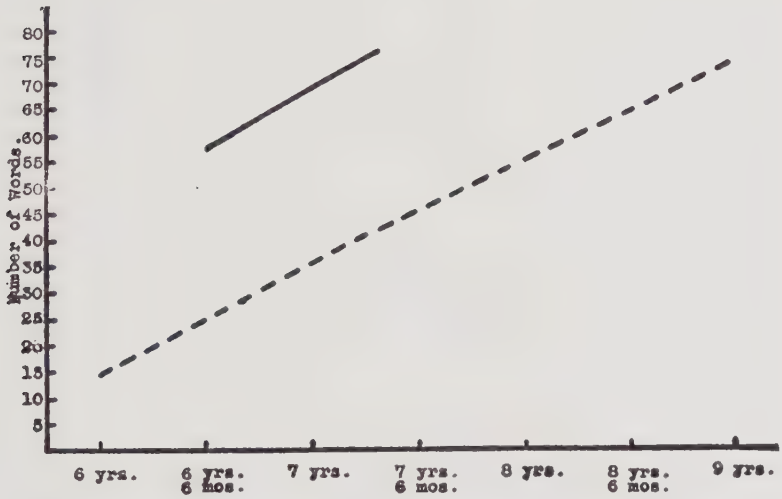

FIGURE 13.—EFFICIENCY OF INDIVIDUAL METHODS IN LONDON AS SHOWN BY THE BALLARD READING TEST

The solid line represents the number of sight words recognized by children who had been given individual instruction, as compared with the number recognized by children of equal age in schools giving class instruction (the dotted line). Read the graph as follows: six-year-old children under the class method read 15 words; children of six years and six months under the individual method read 56 words; seven-year-old children under the class method read 35 words, etc. Individual scores were not available for children of the upper and lower age ranges.

The children did not see the questions until the reading books were removed. The group of children thus tested included all those who were to be promoted to the Senior Departments (grades above primary—4th grade up). Their average age, at the time of testing, was 7 years, 6 months. The average mark gained was 4.3 out of a maximum of 5, one mark for each question correctly answered.

2. The Subtraction Test

Ballard's One-Minute Oral Substraction Test

(1)	2—1	(11)	8—2	(21)	11—2
(2)	3—2	(12)	7—5	(22)	10—6
(3)	5—1	(13)	8—3	(23)	12—3
(4)	6—2	(14)	7—4	(24)	11—6
(5)	5—3	(15)	9—3	(25)	12—5
(6)	2—2	(16)	8—5	(26)	13—4
(7)	7—2	(17)	10—4	(27)	15—9
(8)	6—4	(18)	9—5	(28)	14—6
(9)	7—3	(19)	10—3	(29)	17—8
(10)	6—3	(20)	9—4	(30)	16—7

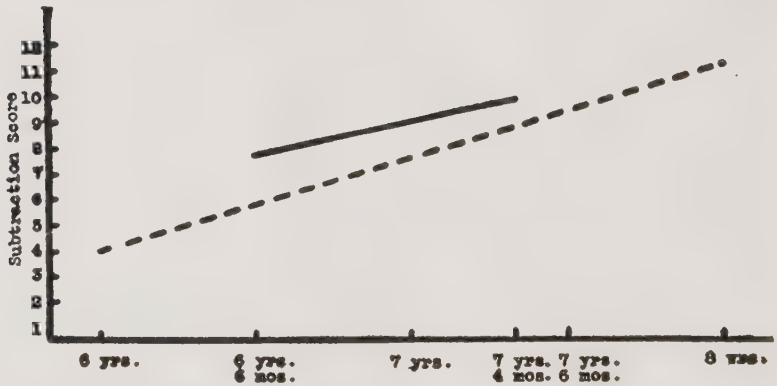

FIGURE 14.—EFFICIENCY OF INDIVIDUAL METHODS IN LONDON AS SHOWN BY THE BALLARD SUBTRACTION TEST

The solid line represents the subtraction scores made by children taught by the individual method; the dotted line represents the scores of children taught by the class method. Individual scores were not available for children of the upper and lower age ranges.

Again, each child was tested alone and individually. The examiner asked the question "One from two?" and as soon as he got the answer passed on to the next question "Two from three?" but the child was not allowed to pass on to the next question until he gave the correct answer. The following norms, obtained by Dr. Ballard, are based on the results obtained in testing about ten thousand boys and girls in schools in London and other English cities.

Age in Years	6	7	8	9	10
Subtraction Score	4	7½	11	11½	18

The Marlborough Infants' School tested all its six-year-old and all its seven-year-old children who had learned through individual methods, and obtained the following results:

Age	6 yrs. 6 mos.	7 yrs. 4 mos.
Subtraction Score	7.7	9.6

These results seem to indicate that this group of children who had learned to read by the individual method gained about 1½ years on the reading norm, but only about 6 months on the subtraction norm. This is very interesting when it is realized that some group work is taken in arithmetic, but none in reading. It might seem that the more individual the method, the more rapid the progress; but the writer does not think such a conclusion would be correct, because the reading apparatus available for these children is more self-explanatory than the number apparatus available.

The outstanding result, however, is to show that the children who had individual work excelled those who had class work, both in reading and in subtraction.

B. Data from Detroit

By Stuart A. Courtis

Detroit Teachers' College

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1. Arithmetic

The characteristic effect of individualized instruction was clearly shown in the results secured by Assistant Superintendent Spain in the Detroit Schools in 1913.[11] The data for the comparisons in a single operation, addition, based on the results obtained in six experimental schools, were as shown in Table 18 and Fig. 15.

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[11] *Seventy-first Annual Report of Board of Education*, pages 132-139.

TABLE 18.—COMPARISONS OF NUMBERS OF CHILDREN MAKING THE VARIOUS TYPES OF GAINS FROM MARCH[12] TO JUNE, 1913

Tests used, Courtis, Series B Arithmetic. Number of schools, six, two in each group. The numbers of children are expressed as percentages of the total children in their particular group.

Type of Change	Oral Drill	Regular Work	Individualized Drill	Average for Ten Regular Schools
Gains of three or more examples	22	35	53	26
Gains of two examples	37	32	27	33
Gains of one example	27	22	16	30
No gain	13	10	3	9
Loss of one or more examples	1	1	1	2
Number of pupils tested	241	334	332	2450

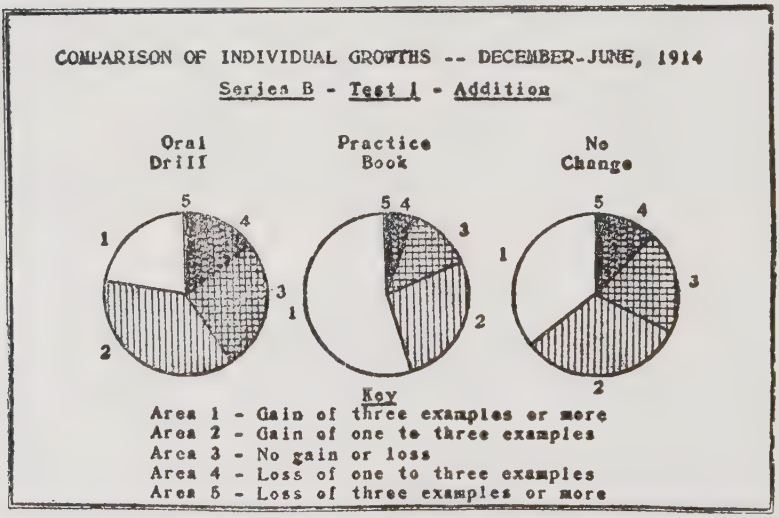

FIGURE 15.—COMPARISON OF GAINS IN ARITHMETIC AT DETROIT UNDER DIFFERENT METHODS OF INSTRUCTION

The effect of individualization of instruction is seen by comparing areas in the central figure, which represents the results when individualized materials were used ten minutes a day, with the corresponding areas in the other figures. The figure marked "oral drill" represents the results from schools which gave ten minutes a day to rapid mental drills; the figure "no change" those from schools following the regular program. The number of children gaining was increased and the number standing still or losing was decreased.

[12] Given as December in Fig. 15.—*Editor.*

In all six schools the same time was given to drill, ten minutes a day. In the "Oral Group" this drill was oral and of the rapid, mental-arithmetic type. Two schools, selected as equal to the others, made no change in their methods of work. The remaining schools used the Spain booklet and individualized instruction.

The effect of individualization was nearly to double the number of children making large gains and to decrease the number of children standing still or losing.

Under methods of mass instruction the percentage of children showing gains of any sort seldom exceeds 60 percent of the total. Individualization of instruction usually increases this figure to 85 percent. The failure of the remaining children to grow is to be explained by ill health, unfavorable home conditions, and similar factors beyond the school's control. The figure, 85 percent, thus becomes a type of standard. Averages may be raised by the overtraining of the specially able, but the measure of efficiency which most truly measures efficiency is that derived from a distribution of all the individual gains and losses within the group. Judged on this basis, many studies prove that individualization of training operates to increase markedly the percentage of children benefiting by drill.

2. Handwriting

A second important measure of efficiency is the level of average achievement in a city. The individualized material known as the "Standard Practice Tests in Handwriting" was perfected in 1918 and adopted for general use throughout the elementary schools of Detroit. Figure 16 shows the level of average achievement the year of the adoption, and the changes of level during successive years up to January, 1924. The curves are based on city-wide scores in the routine tests of the city. These and similar data in many lines prove that the adoption of individualized material, and its proper use, tends to raise the general level of efficiency.

3. Reading

As an example of more definite and more scientific measurement of increased efficiency due to individualization of instruction, a crucial experiment to determine the value of new materials and

methods of teaching reading in the lower first grade will be cited.[13] One hundred eighty children in four schools were matched by pairs in age, sex, and intelligence with the children in four other schools judged to be equal in essential particulars to the first four schools. One group used the Picture Story reading lessons or practice tests while the other group were taught in the regular way.

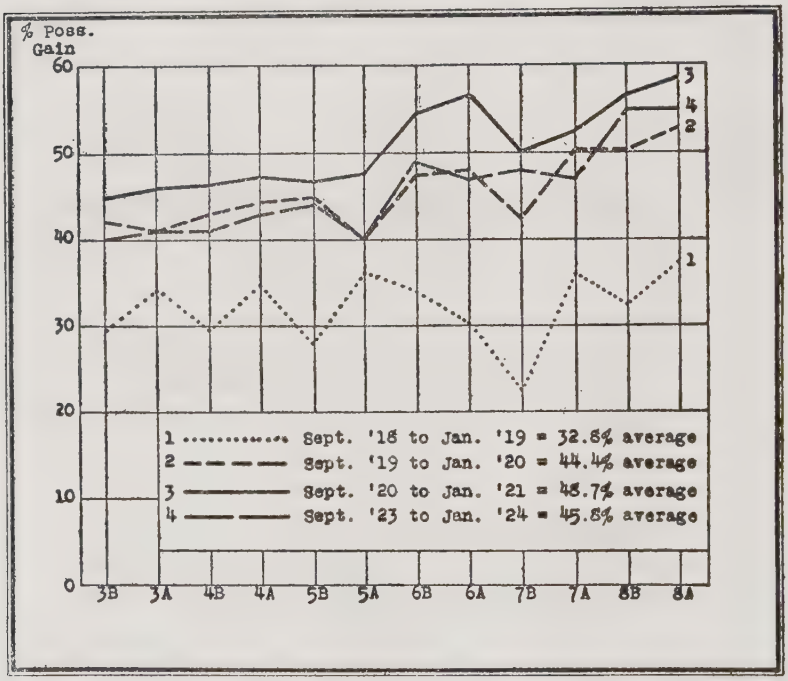

FIGURE 16.—GRADE AVERAGES IN HANDWRITING, CITY-WIDE, BY YEARS, BEFORE AND AFTER USE OF INDIVIDUALIZED LESSON MATERIAL

The results shown in Table 19 and Fig. 17 are from the final test, using a form of the Detroit Standard Group Vocabulary test, designed to measure results in reading in the first grade. Other tests used were the Gray Oral Reading Scale, the Haggerty No. 1 and 2, and a special Detroit Reading Performance Scale.

[13] Mila B. Smith. "An experiment to determine the effectiveness of the Detroit Standard Practice Tests in Reading." *Journal of Education*, June, 1922.

TABLE 19.—MEDIAN SCORES OF TOTAL GROUPS

Test Used	Gray	Vocabulary	Haggerty 1.	Haggerty 2.	Word Picture
Experimental	46.8	26.3	4.6	4.3	2.1
Control	0	17.2	1.2	1	1.1
Gain	46.8	9.1	3.4	3.3	1

The results show that the control group was exactly normal. Its score in all tests except Gray's is almost exactly the average score made by the lower first grade in the city. The group using the

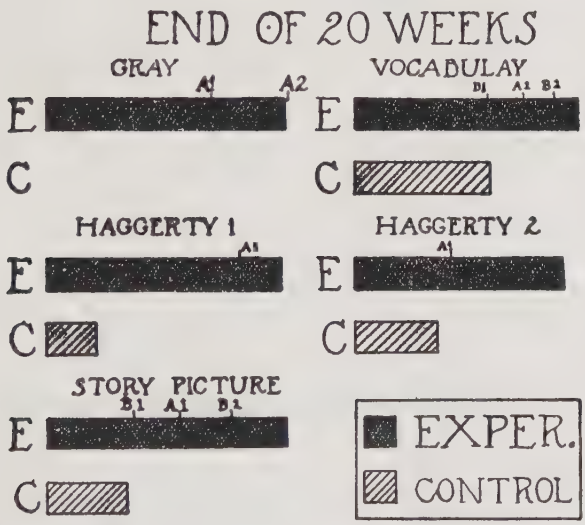

FIGURE 17.—MEDIAN SCORES ON STANDARD READING TESTS GIVEN TO TWO MATCHED GROUPS AT DETROIT

special material, however, made much greater gains. In twenty weeks (the duration of the experiment in both groups) the experimental group nearly made the upper-second-grade standard. In other words, the experimental group accomplished nearly four times as much as the control group.

A better measure of what individualization does for children is shown by the graph shown in Fig. 18. The difference in the number of books read by the various individuals may be seen by comparing the standardized and restricted product of mass instruction (the

part in black) with the extremely variable product of the individualized group.

4. English

Individualization of instruction, once started in a system, rapidly spreads because of its superior merit. As a final illustration of the increase in efficiency resulting from the newer methods, the following quotations from the *Detroit Educational Bulletin* for November, 1924, are given:

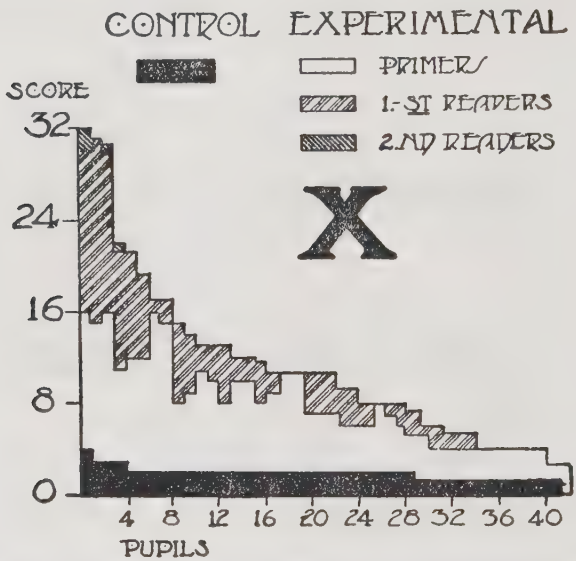

FIGURE 18.—NUMBER AND GRADE OF BOOKS READ BY MATCHED GROUPS OF X INTELLIGENCE

The score equals the total number of books read by an individual. The figures along the base line represent the number of pairs. The figure is to be interpreted as follows: The brightest child in the group under mass instruction completed four books in 20 weeks, all primers; under individualized instruction, the corresponding member of the other group read 32 books, 16 primers, 14 first-grade readers, and two second-grade readers. Individuals Number 4 to 29, under mass instruction, read each two primers, while their matched mates under individual instruction read from 8 to 16 books each.

Two series of *Self-Help Remedial Lessons*, together with appropriate inventory and appraisal tests, have been prepared by Maude Bowles of the English Department.

One series deals with *Grammatical Forms*, and is designed for use in Grades 5 and 6; the other series deals with *Capitalization and Punctuation*, and is designed for Grades 5, 6, 7, and 8.

The lessons aid the pupil, first by revealing to him the specific phases of these abilities in which he is lacking, and second by providing him with practice materials to remedy his particular defects. Thus they provide for individual growth at individual rates.

From February to June, 1924, the material in mimeographed form was tried under controlled conditions to determine the degree to which use of these lessons increases pupils' abilities. Each one of the twelve teachers experimenting had two sections of the same half-grade, one the experimental, the other the control group. Both sections took the inventory and final tests in composition and in the special series which was being used. The duration of the experiment was four months.

Thirty minutes per week was the time allowed for this work, divided usually into two fifteen-minute periods.

Individual pupils in each experimental section were matched on the basis of intelligence letter rating and initial test score with pupils in the corresponding control group. Thus the following factors were kept as constant as possible: school, grade, teacher, time of training, intelligence, initial ability in specific ability trained. The material was the only variable.

Comparison was made of gains in (1) the test on Capitalization and Punctuation or on Grammatical Forms, (2) the score on the regular composition test, and (3) the number of errors made in the composition test.

The results are summarized in the following table:

SERIES ON CAPITALIZATION AND PUNCTUATION

	Cases in which Experimental gain was greater than Control gain	Cases in which Experimental gain was less than Control gain	Cases in which Experimental gain was equal to Control gain
Test on Capitalization and Punctuation			
Number of cases	68	19	5
Percent	74	21	5
Composition Test			
Number of cases	48	30	20
Percent	49	31	20
Errors in Composition			
Number of cases	52	31	17
Percent	52	31	17
SERIES ON GRAMMATICAL FORMS			
Test on Grammatical Forms			
Number of Cases	50	28	18
Percent	43	34	23
Test on Composition			
Number of cases	40	31	21
Percent	43	34	23

The greater gain of the experimental group is seen by comparing the percentages in the first column with those in the second column. The superiority occurs not only in the ability in which training was given, but carries over to ability in composition, and particularly to the use of these forms in free writing and free speech. Thus the lessons do accomplish their purpose.

Over 97 percent of the pupils using the lessons voted to continue their use the coming semester. All the teachers experimenting also expressed a desire to use the lessons in both sections instead of one.

C. Data from Winnetka

By Carleton W. Washburne

One of the main parts of the survey of the results of the Winnetka technique of individual instruction, under the Commonwealth Fund subvention, was a detailed comparison of the scores of Winnetka children on various standardized tests with those of the children in several comparable schools which used the class method. Altogether, about 28,000 tests were given. The children were compared by grades, by achievement groups, and by mental age groups in various subjects. The most satisfactory basis of comparison was by mental-age groups, since the intelligence levels of the schools compared differed considerably. Therefore, all Winnetka children whose mental age was seven but not yet eight, for instance, were compared with children of this same mental age in the other schools, entirely regardless of school grade. A summary of the results is given in the graph, Figure 19.[14]

It is obvious from Fig. 19 that in every subject, and in almost every mental-age group, the Winnetka children did better work on these tests than the average of the class-taught children of the other schools. One school (the university laboratory school) excelled Winnetka in silent reading rate; one school system (the other public school system studied) equalled Winnetka on the Cleveland Survey arithmetic test. Otherwise, Winnetka led all schools. And no

[14] This graph differs from the corresponding one, published in the complete report of the Commonwealth Fund investigation, in that the Winnetka "Test" group and Winnetka "Supplementary" group have been lumped together, and a single midscore found. Spelling has been omitted, as the data are incomplete at this time.

other school made as consistently high a record in all subjects tested.

The tests used were as follows: for silent reading, the Burgess of them by the research worker in the presence of a competent, disinterested witness. The children tested in Winnetka numbered 674; in the other schools, 803.

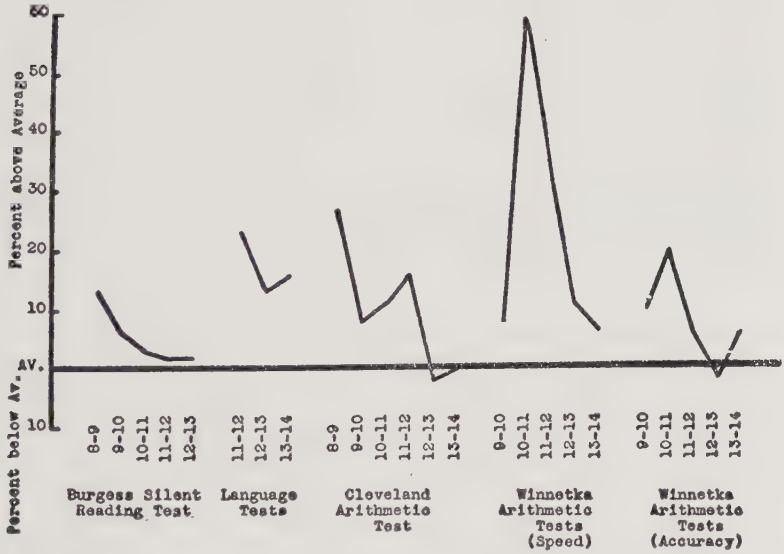

FIGURE 19.—EFFICIENCY OF WINNETKA INDIVIDUAL METHOD, AS COMPARED WITH CLASS METHOD

The horizontal line marked "average" represents the average score made by children in the Winnetka Schools, the public schools of a similar suburb, a private experimental school, and a university laboratory school. The various diagonal lines represent Winnetka scores. Read the graph as follows: Winnetka children of mental age of eight years, but not yet nine, made a reading score 13 percent higher than the average for this mental age in all the schools; Winnetka children of nine, but not yet ten, made a reading score 6 percent higher than the average; those of mental age of ten, but not yet eleven, 3 percent above average, etc. The Winnetka schools used individual methods, the other schools, various forms of class method.

The tests used were as follows: for silent reading, the Burgess Picture Scale, Form 4 (Russell Sage Foundation); for spelling (see footnote 14), the Iowa Spelling Scales; for language, the Pressey Punctuation and Capitalization Tests; for general arithmetic abil-

ity, the Cleveland Survey Arithmetic Tests (the last three all published by the Public School Publishing Co., Bloomington, Ill.); for diagnostic tests of speed and accuracy in arithmetic, the Winnetka Arithmetic Tests (soon to be published by the World Book Co.), and for mental age (intelligence), the National Group Intelligence Test (World Book Co.).

A detailed description of the full technique, and a discussion of the results, subject by subject, is being separately published.[15] The data here summarized in one graph, however, definitely confirm those of Miss Mackinder and Mr. Courtis in showing that individual instruction tends to increase efficiency in the tool subjects.

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[15] Washburne, Vogel, and Gray. *Results of Fitting Schools to Individuals.* Supplementary Monograph of the Journal of Educational Research, Public School Publishing Co.

VII. DOES INDIVIDUAL INSTRUCTION COST MORE THAN CLASS INSTRUCTION?

By Carleton W. Washburne

In order to determine whether or not individual instruction is more expensive than class instruction, a graduate student at the University of Chicago, R. D. Judd, was induced to take as a subject for his Master's thesis "A Study of the Current Expenditures of the Schools in Three Illinois Cities." The three cities were Winnetka and its two neighbors on the north and south, Glencoe and Wilmette. The social composition of the three cities is almost identical; the median intelligence quotient is practically the same. The other two cities both have class instruction; Winnetka has individual instruction.

Winnetka has four distinct school plants. Wilmette, with a larger enrollment, has three plants; its central school is much larger than any of the Winnetka schools. Glencoe, with an average daily attendance of a little less than half that of Winnetka, has one single plant. This results in higher fuel and operating costs in Winnetka and in the necessity for a 'bus' transportation system to bring children from the outlying districts in to the junior high school. Neither Glencoe nor Wilmette has this expense. General control in Winnetka is more expensive than in the adjoining systems, involving, as it does, a higher paid superintendent and an assistant superintendent who receives almost as much as the superintendents of the adjoining school systems. Glencoe and Wilmette do not have assistant superintendents. In spite of these handicaps, the Winnetka schools spend a little less per pupil than those of Glencoe, while both Glencoe and Winnetka spend very much more per pupil than Wilmette.

There are two outstanding reasons for Wilmette's low cost. First of all, the salary schedule is lower; the average salary is about $1586 as against $1824 in Winnetka. In the second place, Wilmette has about 38 children to each teacher, while Glencoe has 26 and Winnetka 29. In the third place, the number of teachers in Glencoe and Winnetka for special work, such as playground direction, shop work, general science, and supervision, is more than twice as large

as it is in Wilmette in proportion to the enrollment. The Wilmette schools are fairly typical of other Illinois cities in the amount of their per capita expenditure, ranking at about the middle of ten such cities. The Glencoe and Winnetka schools are typical of other North Shore suburban systems, making use of the high assessed valuation of their districts to pay better salaries, to decrease size of classes, and to give a wider variety of instruction under special teachers than do most schools. The expense of Winnetka's schools can be attributed to these factors, which it has in common with its neighbor to the north, but cannot be attributed to the cost of individual instruction.

FIGURE 20.—COMPARATIVE COST PER PUPIL IN AVERAGE DAILY ATTENDANCE FOR THREE NORTH SHORE SUBURBS (SCHOOL YEAR 1922-1923)

Of the two schools using class method, one spent a little more than Winnetka, the other much less. See, however, Fig. 22.

Figure 20 shows the relative total expenditure for 1922-23 per pupil in average daily attendance in the three towns. Figure 21 shows the distribution of the expenditures in all three cases.

R. D. Judd, in concluding his thesis, makes the following statement: "There are many items of expense in Winnetka which the other two systems do not have. ..... If there is an economic waste occurring, it is taking place in many ways other than through instruction. In the light of the facts as shown, the writer does not think it is justifiable to say that the reason for the greater expense at Winnetka is the individual instruction plan. ..... The individual instruction plan is not followed at Glencoe, as it is in Winnetka. Glencoe is spending about 69c of each dollar for instruction, while

Winnetka is spending a little over 64c..... Winnetka spends per pupil for instruction $103, while Glencoe is spending $115 per pupil for the same service."

It appears, therefore, that, while Winnetka is spending more per pupil than the average public school system, and more than one of its neighbors, it is spending a little less than is the neighbor which gives approximately the same service. No additional expense appears to be incurred through the system of individual instruction.

Another study, more recent than Judd's, being for the current school year, covering more schools, but less detailed in its analysis,

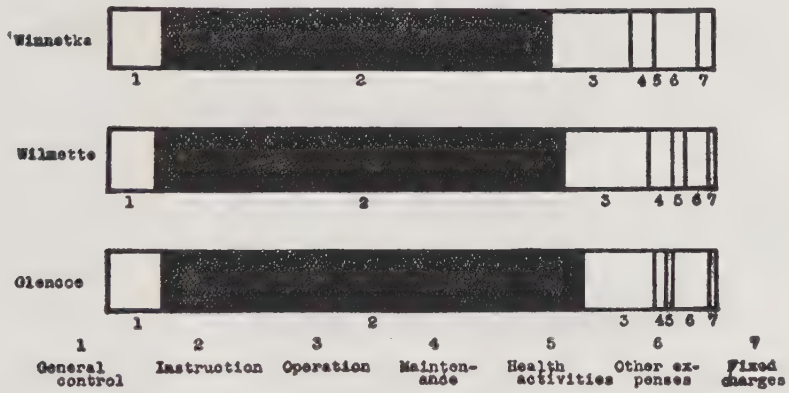

FIGURE 21.—DISTRIBUTION OF SCHOOL EXPENDITURES IN WINNETKA AND TWO OTHER NORTH SHORE SUBURBS

Note that the proportion of money spent on instruction is actually less in Winnetka than in class method schools, while the proportionately larger number of buildings makes operation, maintenance, and fixed charges somewhat higher.

yields interesting data for North Shore suburban schools. The suburbs form an almost continuous string along Lake Michigan—Wilmette, Kenilworth, Winnetka, Glencoe, South Highland Park (including Ravinia) and North Highland Park. In Table 20 and Fig. 22 these schools (except Winnetka) are simply numbered, in the order of their per capita costs. It will be seen that Winnetka occupies a middle position among them. The Winnetka schools are the only ones using individual instruction.

TABLE 20.—COMPARATIVE SCHOOL COSTS IN SIX NORTH SHORE SUBURBS (SCHOOL YEAR 1924-1925)

	I	II	III	Winnetka	IV	V
No. children per class teacher	24	32	26	29	30	38
No. children per special teacher	100	97	76	76	125	179
Av. Salary—all teachers	$1920	$1871	$1950	$1824	$1839	$1586
Cost of teachers, per child	$100	$77	$103	$87	$76	$53
All other expenses, per child	$121	$142	$60	$69	$59	$41
Total per capita cost	$221	$219	$163	$156	$135	$94

The only other definite cost data are those from Los Angeles. There no special appropriation was made by the Board of Education

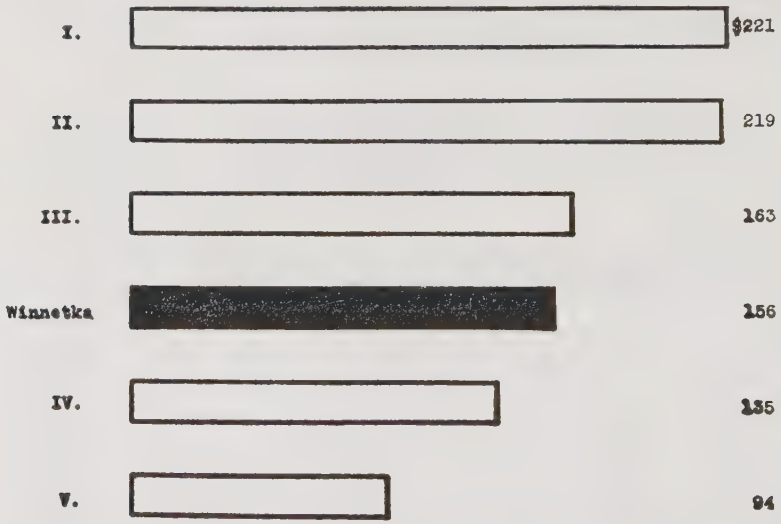

FIGURE 22.—COMPARATIVE SCHOOL COSTS IN SIX NORTH SHORE SUBURBS

Winnetka uses individual methods, the other five, class methods. Expenditures are based on enrollment for October, 1924, and are for the current year. Note that Winnetka occupies an intermediate position, showing no increased cost from individual instruction.

for the individualization of the Sixty-First Street School. The actual per capita cost in that school for 1923 was $74.55, including 47 cents for individual materials from the research office. Of thirty-three schools of the same class and size as the Sixty-First Street

School, eight had higher per capita costs using class instruction than did the Sixty-First Street School using individual instruction.

It is unfortunate that we do not have cost data on individual instruction in more public schools which are typical in their total per capita expenditures. So far, however, we at least have no evidence of any experiment in individualization increasing school costs.

And *a priori* there is no reason why it should. The general technique described in the foregoing section of this *Yearbook* by various experimenters and that outlined in Section V do not call for any extraordinary expenditures. Most advocates of individual work, like most other people who believe in giving children adequate training, attempt to reduce class size to about thirty children. The eliminating of repeaters and the saving of the time of the brighter children will automatically tend to reduce class size. But individual work has been successfully carried out with large classes in Racine, Wisconsin, and especially in the Marlborough Infants' School in London, where classes range from 40 to 54 children to the teacher.

Inherently, therefore, there is no reason for individual instruction to cost more than class instruction. There is no evidence that it does. And in the two places where costs have been carefully studied, no increase due to individual instruction has been found.

VIII. DOES INDIVIDUAL INSTRUCTION PLACE TOO HEAVY A BURDEN ON THE TEACHER?

By Carleton W. Washburne

Teachers often asume that individual instruction will require more work of them than does class instruction. If it were not for the self-correction technique and certain other time-saving devices, individual instruction probably would require much more outside time than does class instruction. But with proper safeguards it seems possible, in the light of the following briefly-reported study, to have individual instruction without overburdening the teachers.

All teachers in Winnetka and in other three schools with which Winnetka's efficiency was compared (a suburban public school system—School I; a private experimental school—School II; and a university laboratory school—School III) were asked to record for two weeks all work done outside of regular school hours. This work they were told to classify as: (1) Correction of children's work, (2) Preparation of materials and lessons, and (3) Making records of various kinds. The average number of minutes spent per day is shown in Table 21 and Figure 23.

Table 21.—Out-of-School Time Spent by Teachers in Winnetka and Elsewhere

	Winnetka	I	II	III
Records	30	13	30	108
Preparation	37	25	134	41
Correction	43	19	105	88
Totals	110	57	269	237

This shows that Winnetka teachers do about 50 minutes a day more outside work than those of the other public school system (I), but less than half as much as those of the private experimental school (II), and the university laboratory school (III).

Apparently, individual work does not impose an undue burden on the teachers. This is borne out further by the fact that teacher turn-over in Winnetka has dropped from 25 percent to about 11 percent since individual work was introduced, and that no teacher has ever resigned on account of the individual system or the burden placed on the teachers.

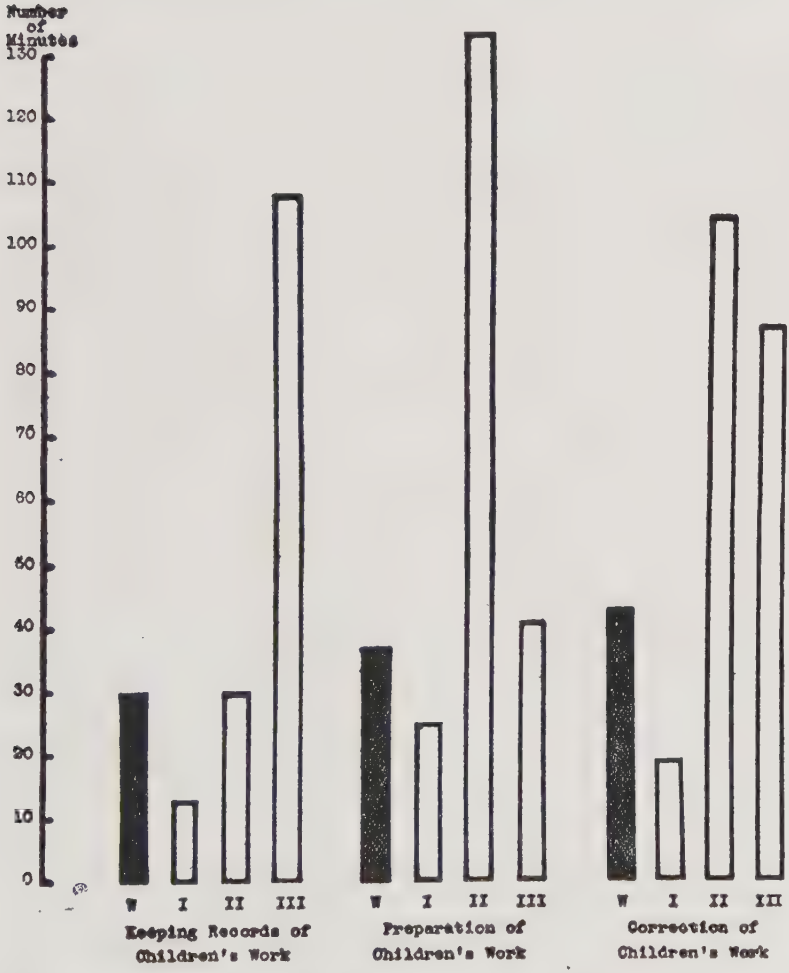

FIGURE 23.—OUT-OF-SCHOOL TIME SPENT BY TEACHERS UNDER INDIVIDUAL INSTRUCTION, COMPARED WITH CLASS INSTRUCTION

The heavy black column represents Winnetka teachers, Column I the teachers in another suburban public school system, Column II those in a private experimental school, and Column III those in a university laboratory school. The Winnetka teachers had more out-of-school work per day than those of the other public school system, but less than those in the other two schools. Winnetka is the only one of the four systems using strictly individual methods.

IX. HOW DOES INDIVIDUAL WORK IN THE ELEMENTARY SCHOOL AFFECT PUPILS' EFFICIENCY IN THE HIGH SCHOOL?

While the elementary school's chief function certainly is not preparation for the high school, parents will not wish their children to be at a disadvantage after reaching the high school. Theoretically, there is probably no adequate reason to suppose that individual instruction in the elementary school should unfit a child for successful class work in the high school; yet the question is often raised as to whether children taught individually in the grades will succeed in a high school where individual instruction is not carried out.

Our data on this question are meager. Individual instruction is not old enough in most places to have given conclusive evidence of its effect on children's high-school life. The San Francisco State Teachers' College experiment is the only one that has been in existence long enough to have sent children, trained entirely by individual methods in the eight grades, through the four years of high schools conducted on a class basis. Unfortunately, no adequate study has been made of the record of these children. Franklin Bobbitt, three years ago, spent three months studying the San Francisco State Teachers' College and the result of its methods. He succeeded in tracing about twenty children who had had all their elementary training under individual instruction and then had had regular class work in the high school. The records of these children in the high school were not especially distinguishable from those of the children who went to the same high schools from regular class-method elementary schools. They were not inferior; neither did they show any pronounced superiority.

The Winnetka Public Schools have yielded some statistical data; but the Winnetka experiment, while begun in 1919, was not fully organized with the necessary materials until at least the fall of 1921. The children who entered the high school in 1923, therefore, were the first who had even had the last fourth of their elementary training under the Winnetka technique of individual work. And these children have only been in the high school now a little over one year.

The conditions are excellent, on the other hand, for observing the results of the Winnetka training when children go to the high

school; for the Winnetka elementary-school graduates go to the New Trier Township High School, which is under a separate board of education and an independent superintendent. Children from three other suburbs, similar to Winnetka in social composition, go to this same high school. Two of the three suburbs spend more per child on education than does Winnetka; all three have the regular class organization. The children from all parts of the township are mixed together in the high school, so that teachers often do not know from which elementary-school system a particular child may have come. In most classes in the high school the regular class-method is still in force.

There is a research department at the high school which is watching closely the records of children from the various schools, and which has furnished the data for the following report.

A Study of New Trier High School Freshmen, Including Pupils who have Come from Winnetka Schools

By Frederick Edson Clerk
Superintendent, New Trier Township High School, Kenilworth, Illinois

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In order to determine whether or not students who have been trained in an elementary school organized on an individual instruction basis are as well prepared to do high-school work as students who have had the conventional group instruction, the following studies were made of students in the freshman class at New Trier High School in the school year 1923-24.

There are four villages and a rural section of Cook County that send elementary-school graduates to the freshman class at New Trier High School. Each of these villages and the rural section has its own elementary-school system. All of these school systems except Winnetka are organized on the conventional group instruction basis with only minor variations.

About midway during the second semester of the school year 1923-24, an effort was made in the high school to determine whether or not there was any difference in scholarship and personal qualities between the students who had come from the Winnetka schools, where they had about two years of instruction and school life under individual instruction, and the children of the remainder of the township who had had their elementary-school experience and in-

struction only in accordance with group methods characteristic of well organized, efficient school systems.

The first of the studies conducted in this connection was made in an effort to determine whether or not Winnetka children differed any from other children of the township in the high-school freshman class in such matters as self-reliance, dependableness, initiative, school loyalty, honesty, and ambition. The procedure and method of this study were as follows: To the teachers who were advisers of freshmen a questionnaire was distributed in which they were asked to indicate, with respect to the qualities mentioned above, the ranking of each of their pupils in terms of Very Superior; Good, or above average; Average, or fair; Poor, or below average; or Very Inferior.

Table I presents a record of the results of this attempt. It appears that there is no appreciable difference between Winnetka students and the others as far as this effort to find the difference, if any, is concerned. The difficulties of making this kind of a study, particularly when the students are not yet well known to the advisers, are fully realized and would account for differences greater than are actually reported. As far as a two-year experience under individual methods is concerned, therefore, it does not yet appear to have a marked effect on these qualities.[16]

TABLE 22.—COMPARISON, IN PERCENTS, OF WINNETKA AND OTHER CHILDREN IN RESPECT TO PERSONAL QUALITIES

	Children from Winnetka					Children from Rest of Township				
	Superior	Good	Average	Inferior	Very inferior	Superior	Good	Average	Inferior	Very inferior
Self-reliance	14	15	35	24	12	13	21	37	19	10
Dependableness	18	32	17	27	6	22	28	32	13	5
Initiative	3	19	56	12	9	4	21	49	19	7
School Loyalty	11	54	26	6	3	13	56	24	7	—
Honesty	24	27	39	8	2	27	35	33	5	—
Ambition	15	29	30	17	9	12	33	32	18	5

[16]A more objective measure of some of these qualities is the proportion of elective class offices held by Winnetka children after they reach the high school. For the school year 1924-25 20 percent of the sophomores came from Winnetka, but 50 percent (2 out of 4) of the sophomore class offices were filled by children from Winnetka. Eighteen percent of the freshman class came from Winnetka, but 75 percent (3 out of 4) of the freshman offices were filled by Winnetka children.—C. W. W.

Another effort to find differences, if any, between graduates from the elementary schools of Winnetka and graduates from other elementary schools in New Trier Township was made in the field of scholarship. The study consisted of two parts, one in terms of average grades in separate subjects, and one in terms of average grades in all subjects. Table 23 shows the distribution of New Trier freshmen by subjects on the basis of their grades during the first semester of the freshman year, and divided into two groups—those who graduated from Winnetka schools and those who graduated from other schools in the township.

TABLE 23.—PERCENTAGES OF CHILDREN FROM WINNETKA AND OTHER SCHOOLS RECEIVING VARIOUS GRADES IN VARIOUS SUBJECTS

	Children from Winnetka Schools							Children from the Other Schools of the Township						
	A	*B*	*C*	*D*	*E*	*F*	Weighted Av. Score	*A*	*B*	*C*	*D*	*E*	*F*	Weighted Av. Score
Math.	11	13	25	8	23	20	D (2.23)	7	21	19	18	19	16	D (2.31)
Eng.	3	10	17	26	27	17	E (1.87)	1	9	21	28	30	11	E (1.89)
Hist.		18	21	24	28	9	D (2.12)	6	17	23	23	17	14	D (2.32)
Lang.	4	21	7	32	32	4	D (2.21)	2	16	17	25	14	25	E (1.92)
Science	11	11	22	28	6	22	D (2.28)	7	19	13	24	25	12	D (2.24)

A, Very superior work
B, Superior work
C, Good. High average work
D, Fair. Low average work
E. Poor, but passable work
F, Failure

While there are variations as between the two groups of pupils reported in Table 23, there is no outstanding difference between them—at least no greater variation than there is within the groups themselves.

The second part of the study made in this connection was planned with the view of determining, if possible, how the pupils in the New Trier High School freshman class who had come from the Winnetka schools compared with other pupils in the same class who had come from other elementary schools in the New Trier Township, in terms of average scholarship in all subjects.

TABLE 24.—PERCENTAGES OF WINNETKA CHILDREN COMPARED WITH THE PERCENTAGES OF OTHER CHILDREN RECEIVING CERTAIN GRADES IN AVERAGE SCHOLARSHIP ALL SUBJECTS

	Winnetka Children	Other Children
A	—	—
B to A—	7	4
C to B—	17	14
D to C—	22	25
E to D—	32	35
F to E—	21	22

While there does not appear to be any significant difference between Winnetka pupils and the others as far as scholarship in certain branches is concerned, it does appear from this investigation that the children from Winnetka have on the whole a better average scholarship rating than the children from the remainder of the township. Just how much this superiority in scholarship is due to the training the Winnetka children have received is a matter of speculation. It may be a chance variation, since we are comparing about 60 children from Winnetka with about 250 children from

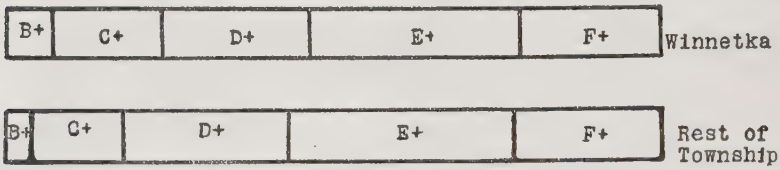

FIGURE 24.—COMPARISON OF GENERAL SCHOLARSHIP IN THE HIGH SCHOOL CHILDREN TRAINED UNDER INDIVIDUAL AND CLASS METHODS

A higher percentage of the Winnetka children, trained under individual methods, made marks of C or better, and a lower percentage, marks below C, than did the children from the surrounding suburbs, where the class method is in force.

other parts of New Trier Township. If this apparent superiority in scholarship cannot be attributed to the Winnetka training, it at least seems reasonable to say that the scholarship efforts of these pupils were not seriously inhibited by their Winnetka training.

Table 24 shows that there was a greater percentage of the Winnetka children in the higher scholarship groups, and a smaller percentage of them in the average and lower scholarship groups than was the case of the pupils from the other township elementary schools. The difference was slight, but certainly in favor of the Winnetka pupils.[17]

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[17] The "Honor Roll" is made up of those students having the highest grades each month. Of the 1924-25 freshmen, 10 percent from the rest of the township were on the honor roll in November, December, and January. The number was almost exactly the same from Winnetka, 10 percent November, 10 percent December, 11 percent January. Of sophomores from the rest of the township, 10 percent were on the Honor Roll in November, 11 percent in December, 10 percent in January; while of

That there are limitations to the extent to which the Winnetka school system may be judged by the results of this study will be apparent even to the most casual reader. For purposes of reliable comparison the groups are as yet too small, the Winnetka pupils have not yet had the specialized Winnetka training long enough to be influenced by it to a great degree, the method of this study is not sufficiently reliable to establish a basis of comparison in its present preliminary form, and the Winnetka children are not yet far enough into high school work to give much reliable evidence of their ability to handle it.

The observations in this study are offered only as a beginning of a continuous plan of observation and analysis, with a view of perfecting such a plan of comparison and to discover as early as possible any marked differences in pupils coming from Winnetka as compared with other pupils and to evaluate these differences as they appear. So far the differences seem to be no more marked than chance differences might be, but whatever differences there are seem to be in favor of the Winnetka pupils.

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sophomores from Winnetka 10 percent made the honor roll in November, 10 percent in December, and 15 percent in January. These data, a year later than those given by Mr. Clerk, bear out the general conclusions of Mr. Clerk's contribution.—C. W. W.

III. SUMMARY OF STATISTICAL RESULTS

Very briefly, the answers to the nine questions raised in this part of the *Yearbook*, as given by various statistical investigations, are as follows:

1. Do pupils fall into natural ability-groups? No. Ability-groups can be formed and will make better adaptation to individuals than will undifferentiated mass instruction. But the range of ability and progress in each supposedly homogeneous ability-group will soon be much greater than the differences between groups. Ability-grouping does not satisfactorily solve the problem of adjusting the schools to individual differences. The evidence on this point is adequate and conclusive.

2. Does individual work save time? It saves time for the faster children and probably also for those who would be repeaters under the old system. In demanding that each child master each step, it probably slows down the progress of some children who are just below average ability. And there is not clear evidence that it saves the time of the "average" pupil. For at least 50 percent of children, however, it does save time.

3. Does it provide more time or less time for social and self-expressive activities? The only statistical evidence on this point is that of the Winnetka schools. These schools certainly provide for more time for socialized and self-expressive work than do most others.

4. Does it put children through school too fast? Again, the only concrete evidence is from Winnetka. The percentage of under-age children there is only slightly higher than in similar schools conducted by class methods; and the median age of 8th-grade graduates in June, 1924, was 13 years, 11 months.

5. Does it decrease retardation? All studies indicate that it probably does. The Winnetka survey shows only 14.4 percent of children over-age, as compared with an average of 22.2 percent in schools of similar composition using class methods.

6. Does it increase efficiency in tool subjects? A small study in London, and elaborate ones in Detroit and Winnetka, all indicate that efficiency in the tool subjects is definitely increased by individual instruction.

7. Does it cost more? Such data as are available indicate that it does not.

8. Does it place a heavier load on the teacher? Data are inadequate. The Winnetka study indicates that Winnetka teachers spend more time per day on correcting papers, preparing materials, and keeping records than those in a typical public school (about 1¾ hours in Winnetka, about 1 hour in the public school system compared), but much less time than those in the private experimental school or university laboratory school studied.

9. Does individual work in elementary schools increase or decrease efficiency in high school? Data are inadequate. Such as there are indicate that pupils trained under individual methods are at least as efficient in the high school as those trained under class methods, even when the high school uses class methods.

In conclusion, more data are needed to answer a number of questions definitely. There are enough data, however, to make these conclusions reasonably safe:

Ability-grouping does not adequately provide for individual differences; individual instruction saves the time of many children; it tends to raise the level of efficiency in the tool subjects.

IV. THE VALIDITY OF THE CONCLUSIONS FROM THE STATISTICAL DATA

By B. R. Buckingham
Ohio State University, Columbus, Ohio

When Dr. Washburne first suggested that I write a criticism of this part of the *Yearbook,* his emphasis was upon the validity of the statistics rather than upon the validity of the conclusions. His later emphasis seems to me to be wiser. On the former basis, I should perhaps have felt called upon to discuss points of statistical technique—and such a discussion, at least as I should have to handle it, would be pretty barren.

As to the conclusions, however, I wish to say at the outset that it seems to me that, so far as they are capable of being based upon statistical data at present available, they follow reasonably well from the figures presented. I should like, however, to point out that there are important considerations on which these statistics throw no light. The main conclusion undoubtedly is that "ability-grouping does not adequately provide for individual differences." The principal non-statistical question which this conclusion raises is that of adequacy. When Miss Ward and her co-authors disclose the fact that 99 low-first-grade children varied from 4 to 162 days in accomplishing the same amount of work, it is held by the chairman, and it would be held by anyone, I should suppose, that this constitutes an enormous range of variation—a range which, if it existed in a given classroom, would make effective group teaching out of the question.

If, however, we divide the pupils into three groups, as is done in the graph shown in Figure 4 of this section, placing the lowest third in one group, the middle third in another, and the top third in another, we manifestly reduce greatly the variation. The most capable group, however, would, as Dr. Washburne points out, still range from an ability to master the work of the grade in four days to an ability to master it in 50 days. The median child among these most capable children required 32 days to reach the goal of the grade in reading. If the rate of teaching were established at 32 days for the work of the grade, it is clear that approximately half the pupils of the group would be working at less than their natural

rate while approximately half of them would be working at a speed greater than was natural to them. Whether and to what extent a portion of the injurious effects of retarding the bright half of the group could be met by requiring a higher standard of performance, whether and to what extent the injurious effects of accelerating the less capable half could be met by reducing the requirements, and finally whether either of these procedures could be introduced without so modifying the teaching that it ceases to be group teaching, are questions which the data in hand do not permit us to answer.

When is instruction individual? In a sense, all instruction is individual. No elementary-school teacher fails in some degree to individualize her instruction. Perhaps the purest form of group teaching is the lecture type which we find practiced so frequently in colleges and universities. But this type of teaching does not make its appearance in the elementary school, although heaven knows the teacher, even in the elementary school, often monopolizes, after the manner of a monologist, the greater part of the class period. The fact, however, is that all elementary teaching, as soon as it singles out this pupil or that to react in a definite fashion, is a sort of individual instruction. When, therefore, does the instruction become so definitely personal in its character as to merit classification as individual? On this question, there is no answer in this section of the *Yearbook*. It is apparently the kind of instruction which goes on at Winnetka, at the San Francisco State Teachers College, at Detroit, and at Miss Mackinder's school in London.

I should like to see an experiment tried in which the amount of individualization of instruction would be varied for different groups of children from practically zero, as in the lecture method, to as large a proportion of the total school service as obtained, say, at Winnetka. The statistics of progress in relation to ability on the part of groups taught with these varying degrees of individual appeal would be decidedly illuminating. It may very well be that individual instruction as conducted in the centers I have mentioned may be superior to the mass teaching usually employed in the schools. Yet it may also be true that a lesser degree of individualization may be still more beneficial. Similarly, a greater degree of individualization may be desirable.

Accordingly, I should like to make the point that these statistics,

though they convey a rather clear message, have at bottom a crudely dichotomous classification which should be replaced by a finer gradation approximating the continuum which the quantity "amount of individualization" undoubtedly is.

Moreover, when it is said that ability-grouping does not adequately provide for individual differences, there is implicit in the statement the notion that there is necessarily some *opposition* between ability-grouping and this other method—namely, individual instruction—which is found to be so efficient. Such, however, is not the case. Again, consider Figure 4 once more: if the 99 children shown in the lower first grade as varying so widely are divided into three groups without any reference to ability, we shall have classes whose variability approximates that of the entire group—a variability represented in this instance by a range from 4 days to 162 to accomplish the same result. On the other hand, if the 99 children are divided into three classes—upper, middle, and lower—on the basis of ability, the range in days required to accomplish the same result would only be as follows: for the fast group, 4 to 50 days; for the middle group, 52 to 69 days; for the slow group, 70 to 162 days.

Now, no one will say that by the latter arrangement teaching procedure has not been made easier, and this is true whether the teaching procedure takes the form of individual or class instruction. Accordingly, ability-grouping, instead of being regarded as an inferior competitor to individual instruction, may, if we choose, be regarded as an effective help in individual instruction. By subdividing 99 pupils into three ability sections, it would seem that we reduce the variation in a given class to more nearly workable dimensions; and this fact should have a favorable influence, whether, subsequent to this ability-grouping, the teaching is on a class or an individual basis. It seems to me, therefore, that neither statistics nor logic justify an abandonment of classification so much as a regard for it as a step toward that more accurate adjustment of materials and methods to the personal needs of pupils which is called individual instruction.

I see in the treatment of the data in this section a rather naive notion of statistical classes. I have already alluded to the idea that one may draw a line and say, "On this side is individual instruction

and on that side is class instruction." I have already pointed out that the individual element in instruction in reality varies continuously from zero to an undetermined maximum—a maximum probably represented by the pure tutorial method of teaching. The failure of the statistics in this section to recognize the existence of continuous variation in certain functions leads to the erection of a man of straw when the question is asked: "Do pupils fall into natural ability groups?" After measuring the abilities of children, whether in psychological characteristics (Los Angeles) or in school achievement (Los Angeles and San Francisco), the authors call upon us to observe that "there are no clear-cut ability groups." To our supposed astonishment, we are confronted with the fact (which evidently is expected to throw us into some confusion) that "children are distributed evenly in each subject and do not bunch appreciably at any one place." Do we not know that when we use such terms as 'bright,' 'average,' and 'dull,' or 'fast,' 'medium,' and 'slow,' we do so merely in order to facilitate talking and thinking about a function which we know quite well to be continuous from very low to very high? It is not at all necessary to discredit the classification of pupils by this means. No one ever supposed that the bestowal of a name upon a group of pupils and the placing of them in a room together was either based upon a dead level of ability or created, by some magic, an unvarying ability within the group in question.

Let it not be for a moment supposed that I am arguing for the superiority of classifying pupils instead of applying to them the degree of individualized instruction which is in operation in the cities to which our attention is called in this section. Not at all. I am concerned, however, first with any technique which will be an improvement over present methods, even though it does not prove to be as good as some other technique more difficult to apply; and second, with the fact that classification, instead of being hostile to individualization, is in reality its ally.

Certain minor conclusions are reached in this section, and the sufficiency of supporting data varies considerably with reference to these conclusions. It seems to me that on the question of whether individual work saves time, the conclusions are well buttressed by the facts adduced. Moreover, it is said that other data, presented elsewhere in this volume, contribute to this conclusion. The data of

other sections are unknown to me, but, merely on the basis of the statistics offered in this section, it seems clear that time *is* saved (see especially the article by Miss Ward *et al.* and by Washburne); and that this saving is particularly apparent in the case of the more capable children.

Immediately, however, arises a bogey man in the shape of the question: "Does individualized work put children through school too fast?" When one stops to think of it, this question is at bottom absurd, and the position in which the chairman places himself in raising it, is somewhat delicate. On the one hand, he wants to show, and does show, that individual work saves time; moreover, that it saves time for the bright children. On the other hand, he feels constrained to show that pupils do not get out of school too soon. This balancing on a knife edge between saving time and not saving too much time is interesting. I can guess how it comes about. There is a large group of school people who do not believe in permitting pupils to finish school at an early age. They will have none of individual instruction if it is going to produce twelve-year-old graduates from the elementary school—and this despite the obvious fact (which many of them will admit) that many children can complete the elementary course of study by the time they are twelve. Therefore, in order that individual instruction may not lose friends, it must be shown that pupils do not go through school too fast when they are brought under its influence. Now, the evidence here presented is to the effect that children save time, especially the bright ones. Then they must get through school sooner than would otherwise be the case. Whether in so doing they go through school "too fast" depends upon the standard of speed which we apply. But if for these bright pupils the course of study is made richer—and I do not understand that there is anything in individual instruction to preclude this—then it may well be that better training will be provided. There is nothing sacrosanct about the present standards of knowledge and skill in the public schools. If individual instruction gets children along faster, we can either give them more to do without letting them out any sooner or we can take the gain in an immediate saving of time. In the latter event, all the disadvantages about which timid teachers are so nervous will disappear as soon as a goodly number of pupils receive the same benefit.

Some of the conclusions stated in this section are insufficiently supported, and this has generally been duly recognized. The data, for example, on the influence of individual instruction upon retardation are insufficient. The amount of retardation in Winnetka is indeed small (14.4 percent). It is less than that of school systems in surrounding and similar suburbs. It is very much less than that of school systems in industrial cities. How much, however, of the differences in favor of Winnetka are due to other conditions than individual instruction, the statistics do not permit us to say. Merely to erect in the consciousness of teachers the ideal of reduction of retardation is to set up a condition favorable to reducing it.

For my part, however, I feel that the quantitative data presented in this section are significant. In my judgment they justify the belief that individualized instruction has thus far rendered a good account of itself.

SECTION IV

PROBLEMS INVOLVED IN ADAPTING SCHOOLS TO INDIVIDUALS

The need for individual work has been brought out; typical experiments have been described; certain questions have been answered in the light of scientific evidence. In this section are discussed a few of the problems involved in individualizing schools. For the most part, scientific evidence is not adduced herein; it is perhaps just because we lack statistical data on many of these questions that they become problems.

What sort of curriculum becomes possible under individual methods? What sort of textbooks and tests should be used, and how can we make shift with what we have? What sort of program or daily time schedule should be followed? Should children be kept together in classes, with differentiated assignments, or promoted by subjects and individually? How large should classes be? How much supervision should children be given during their individual work? How can the attitude of teachers be changed so that they can make individual work a success?

None of these questions can be answered categorically; each one can bear careful thought. It is to provoke such thought that this section has been prepared.

A. INDIVIDUALIZING THE CURRICULUM

In the foregoing sections of this *Yearbook* the curriculum has received scant attention. Some of the plans presented in the Section II simply made use of the traditional curriculum as they found it; others differentiated the curriculum to some extent, giving extra assignments to the brighter children. One or more of the plans has involved the use of the results of research in determining the common essentials of the curriculum, and has added to these, various group and creative activities for fuller development of each child. None has completely reorganized the curriculum, *i. e.*, changed it from a learning curriculum to a curriculum of functioning. Bobbitt, in the following pages, shows some of the future possibilities of the curriculum under the individual method.

By Franklin Bobbitt
University of Chicago, Chicago, Illinois

The facts relative to the actual curriculum of schools employing individual instruction are being presented by those responsible for the work. It is my purpose here to present only what appear to be certain facts, or at least probabilities, as to ways in which the curriculum might be improved through the use of individualized education.

Our profession is inclining more and more to the belief that education of maximal effectiveness is to be accomplished through the experiences of normal living. And normal living is mostly an individual matter. This does not mean that it is solitary. Much of the time one does his part within a social situation; and yet his is an individual, voluntary, self-directed part.

A girl is to be trained, let us say, to perform the practical occupations of the household: certain home-cooking, home-sewing and mending, laundry, household ordering, cleaning, marketing, etc. These are the activities of individual homes and they differ from home to home. They are not done *en masse*.

The only sane way to train a girl to perform household labors is

primarily to have her perform household labors in her own home under the normal conditions of that home. She may be associated with her mother or sisters. They may divide the labor somewhat; but it is individual work none the less.

The girl who is getting her individual training through the performance of these labors will perform them in the main through self-direction. School and parents may have to exercise certain stimulations or pressure; but the details of the action will have to be mainly self-directed. Parents and teachers will assist her to know what to do and how to do it; they will exercise certain supervision; and they will award recognition in proportion to meritorious accomplishment. These are matters, however, that are to be employed by way of *conditioning* the girl's own self-direction.

In the conduct of her labors of cooking, sewing, marketing, etc., she needs to be guided by information, some of it quite complex and technical. It is the function of the school particularly to assist her in securing this information. Some of it will be given in the form of talks by the teacher and demonstrations in the laboratory. Much of it is equally needed by all of the girls and can be given to them all at once as a class. In working the information over in various ways a certain amount of discussion and problem-solving will be employed. This also must be group or class activity.

But these class activities are merely accessory and preparatory to the actual fundamental activities of the home itself which necessarily are individual. And in the giving of the information, much of it should be focussed on the specific difficulties met with in the particular homes by the individual girls. Much of it certainly must be individual conference of mother, daughter, and teacher. Much of the reading and study of the girls relative to the particular problems must be individual as they meet with those problems.

We have taken an illustration where it is quite obvious that most of the fundamental training experiences must be individual, and where much of the accessory or preparatory training experiences must also be individual. The illustration, however, is typical of the entire content of functional education in all of its aspects. We are coming to believe that one hundred percent of education should be devoted to training individuals to do things. It is not a mere academic mastery of a few academic skills and several bodies of aca-

demic information. It is rather a preparation of men and women to do the numerous things which make up the totality of human life.

All of the activities which make up human life are just about as individual as the home occupations. As one cares for his health, it is a matter of self-directed right living twenty-four hours of the day and every day in the year. It is a problem for each individual according to his nature and situation. The physical upbuilding and maintenance must in the main result from what one himself does, and from the habits which he himself forms. Here, again, the school can give certain general information and advice, and can do this class-fashion. Much of the information and advice, however, needs to be fitted to the individual needs, and must therefore be individually given. But the normal living which in time constitutes good habits, and results in the development and maintenance of the physique—all this is necessarily an individual affair.

If one is to be trained to read current publications by way of keeping abreast of human affairs and problems, and by way of maintaining a clear vision over human society in all of its complexities and relationships, quite obviously the training must come from an abundance of self-directed, spontaneous reading of newspapers, magazines, and books. This can have no resemblance to the reading of normal living if great masses of individuals must be assigned the reading at the same time, in class fashion, of the same newspapers, the same magazines, and the same books. If it is all mechanized and directed in this manner, the spontaneity of the experience is lost. It can be neither normal nor effective. Individuals may be driven through such a course; but the results must be quite the opposite from those intended. The desired habits will not grow up out of such experience. Such vision as may be obtained of human society will tend to be perfunctory and non-vital.

The individual is social-minded and he will not develop and maintain this vision is most cases without a certain amount of discussion of matters met with in his reading. And he can profit from the interpretations of those who are older and wiser than he. There appears, therefore, to be a place for the group activity of discussion of the social topics and problems, and a place for listening to lectures or talks by his teachers. It must be noted, however, that these are supplementary matters and can not exist in proper form except as the

fundamental, individual reading experience lays the broad and solid foundations.

In the same way the genuine reading of literature, whether it be in the English language or in a foreign language, must be at bottom an individual matter and in the main self-directed. There is here, too, a place for certain general stimulations and direction which can be managed class-fashion. And yet, after all, this is merely accessory and preparatory. The fundamental experiences, to be normal, must be individual.

Natural science from the point of view of human functioning can be seen as a *viewing* by the individual of the things, forces, and phenomena which make up the natural world. This observation should be both direct and indirect and it should be continuous as a growing, expanding, and deepening thing through the years of childhood, youth, and manhood. Just as with the reading of current publications, this continuous science observation of one's environment, near and far, must be spontaneous, voluntary, and self-directed, or it will not be done. An activity of this sort is so subtle and subjective that it can not be compelled.

And yet, of course, there is a certain revealing of reality which can be accomplished through demonstrations and lectures in the laboratory or through pictures and diagrams; and there are problems which can be developed and illumined through group discussion. Then, too, there is the stimulation which comes from the introduction of the social motive. These matters can be accomplished in class. But such experiences must be looked upon as auxiliaries to the fundamental experiences of current and continuous direct and indirect observations of natural phenomena. They are preparatory and supplementary.

We have illustrated rather fully, since it is the concrete examples which best show the indispensability of individualizing experiences if they are to be of normal type. Let us now summarize:

Education is accomplished through two types of activity on the part of the pupils. On the one hand, there are the fundamental experiences of normal living. These must be the basic means of education; and most of them must be individual or they are not normal. On the other hand, there are activities which are merely preparatory to the fundamental activities—the assembling of certain ideas

necessary for guidance, sometimes preliminary drill by way of developing a certain initial skill, and the like. In almost every field of education a portion of these preliminary matters is general in character and needed more or less equally by all of the pupils. For the sake of economy and for the sake of introducing the social motive, it seems they can largely be managed by groups or classes. The application of these matters, however, in the fundamental experience is almost always an individual matter; and ofttimes there is need of special kinds of information and special kinds of drill on the part of the individual by way of meeting his special problems. As a consequence, this preliminary information-giving and drill needs in part to be an individual affair.

The full humanizing of the individual comes quite largely from contact with vigorous, inspiring, high-minded personalities. Teachers of this latter type can extend their influence and economize their labors by dealing with pupils in classes for a certain portion of the time. This is a matter on which we have so little quantitative information that it is impossible even to guess whether the amount of time should be small or large. The probabilities are that quality is of more importance than the amount of time.

And then there is the need of pupil association as they participate in their numerous activities. Whatever one's experiences, if they are vital, it is human nature to talk them over with others; and it seems that this is necessary for turning them over in mind, seeing their significances and relationships, and otherwise digesting and assimilating them. This, too, requires group activities—mostly small groups, and best when spontaneously formed. This expression is a very subtle thing. It must be spontaneous or it is neither normal nor effective. And to be spontaneous, although part of a group affair, it must be individual expression which grows naturally out of individual experiences. It can not be a mechanized and assigned affair. It is a matter of individual activity within a social group.

As one attempts to formulate the curriculum of functional education, it seems desirable to include both individual experiences and group or class experiences. It seems, however, that the experiences of dominant and preponderant types should be those of individual character; and that even where we have group activities, much of

the time the activities must be fully spontaneous and individual, even though manifesting themselves within a social group.

We are not saying that those schools where individualized education is being developed have yet been able to go as far as we have indicated in the direction of a thoroughly functional education. For the most part, they have not been able to do so. The thing we are saying, however, is that, as we functionalize the curriculum, we certainly shall be compelled to move in the direction of individualizing our education, and correspondingly away from the mechanized, uniform, mass handling of impersonal human units in academic study and recitation. The individual plan, in which there is a sufficiency of group activities, will permit the functional curriculum, whereas the mechanical lock-step plan is one of the greatest obstacles in the way of developing a functional education.

Now, it is possible for a school in which there is individual instruction to hold to an ancient, reactionary, academic program. It can lay out the content of the older type of curriculum into definite units of work. It can provide teaching and testing materials to cover each of these units. And thus it may have merely another plan for doing the ancient thing. It may merely claim that it can do it better by letting each individual go his own gait. It must be noted, therefore, that the plan of individual training does not necessarily carry with it an improved type of curriculum. We wish here only to point out that it *can* be so employed when we wish to do so, and that the mechanical class-teaching plan does not lend itself to such improvement.

In a rational system of education there can be no such thing as uniform standards to be achieved equally by all pupils. It seems that each should be assisted and encouraged to go as far as he will, so long as he is developing his powers in a balanced or proportioned way. This latter requirement will prevent anyone's overdoing the training along any of the specific lines. When stated in this way, it appears to be practically impossible to fix quantitative standards of achievement for any individual. He has to be tried out to see how far he can go before we can discover what is normal and appropriate for him. This diversification is possible with a well developed system of training which is both functional and individual. In assisting each individual to go as far as he will or as far as he can,

without injury, it is discovered that in developing necessary skills, for example, one individual will require a fairly large amount of drill, while another will achieve the necessary skill in much less time and with much less effort. Likewise, in assembling that information which is necessary for self-guidance one individual needs much which he acquires relatively slowly; another individual needs less which he acquires relatively rapidly. As education is individualized, these differences in need are automatically taken care of. In the uniform lock-step, they have mostly to be ignored. This is done with great loss, especially to those individuals who vary markedly from the average of the class.

The individual plan permits us to lay out a curriculum of general education which is much the same for all pupils, whatever the level of their natural capacity, and then to let the pupils themselves provide the differentiation due to differences in natural capacity. Those of large native capacity will go rapidly and they will go far. Those of medium capacity will travel much the same road, but more slowly; and they will not get so far. Those of inferior native capacity will travel toward the same heights attained by their stronger brethren, but they will have to content themselves with the attainment of the lower levels. The pupils are not artificially or arbitrarily differentiated. The efforts of each determine the place of each.

More than under the class system, there must be measurement. Teachers and pupils need to know native capacity in order to estimate the distance that any pupil can go. Equally, they need to know achievement upon the several age levels by way of knowing whether the pupil has been advancing according to his native capacity. Under such a system there can be no such thing as uniform graduation requirements. Each should go as far along the several lines of his development as he can be prevailed upon to go. Each should have a certificate of the actual proficiency attained. This of course is an administrative measure; but it is a vital factor in developing a functional curriculum.

B. TEXTBOOKS AND TESTS WITH THE INDIVIDUAL METHOD

Bobbitt has discussed some of the ultimate possibilities of the curriculum under individual methods. It textbooks are used at all for such functional education as he describes, they will certainly have to be a new kind. Stoddard, as a superintendent dealing with the immediate problem of texts and tests in the individualization of his own schools at Bronxville, N. Y., takes the practical point of view. What kind of texts do we need now, and how can we get along with what is available until texts are published especially for individual instruction?

By A. J. Stoddard

Superintendent of Schools, Bronxville, New York

The problem of the right kind of textbook and test materials to be used with the individual method must be solved before there will be any wide-spread use of the method. This is especially true in larger school systems where it would be an impracticable administrative task to produce large enough quantities of special materials to supply the needs.

Most of the textbooks that have been written were meant for class use, with the teacher assigning daily lessons and meeting the class in daily recitations so that the necessary directions and helps might be given from day to day. They were not written so that the child could get from them complete directions and drill for his progress, step by step. Moreover, most of them fail to supply the type of development material so arranged and presented, step by step, that the average child learns what he should by performing the different tasks as outlined and suggested in the book. It is interesting to note that the definition given for "textbook" in Webster's *New International Dictionary* is: "A volume on which a teacher lectures or comments, hence, a manual of instruction."

The amount of drill work is usually insufficient to fix the facts, knowledge, and skills that are acquired only through doing or learning a great many times the things that are to be done or learned. Of course, the texts may be supplemented with any of the many fine

types of drill work that are now on the market. However, outside of the drill work in the four fundamental operations in arithmetic, there is not a very wide list from which materials can be chosen. It is better to have sufficient drill work follow, in an intimate way, the development work in a particular subject. For instance, a large amount of the right kind of drill work should follow each step in long division, and be a part of the same book that supplies development materials in this subject. These drill materials should be corrected by the child himself, with the answer sheets so keyed that the child is referred to the proper drill materials in order that he may make up whatever deficiency is indicated in his work as he goes along. This probably is the most important addition that must be made in adapting present textbook materials to use with the individual method.

Textbooks usually do not include definite, diagnostic practice tests by which the child can test himself at frequent intervals to determine whether or not he is getting the work as he goes through it. Such tests are essential if the child is to proceed as an individual and diagnose his own difficulties. Just as with the practice materials, the pupil should correct his own practice tests with answer sheets that are so keyed as to refer him to the proper drill materials to strengthen his weak spots as indicated by the test.

All of these criticisms do not apply to many texts that are being written to-day. For instance, there are several sets of arithmetic and junior-high-school mathematics books that have appeared on the market recently that very nearly fulfill all the requirements listed above.[1] One text in geography[2] has just come off the press that promises to fill a big place with those using the individual method. In this text the materials are so arranged that the pupil is led constantly to do one thing or another, to solve this problem or that problem, to look up answers to this question or that—all of which causes him to do his own learning as he progresses through the book. Even the pictures in the text have no titles under them and

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[1] Among these might be mentioned such books as:
Brown-Eldredge *Arithmetics*, Row, Peterson & Co.
Shorling-Clark *Modern Mathematics*, World Book Co.
First Course in Algebra, by Nyberg, American Book Co.
The C. B. A. Hurdle Tests in Algebra, Rand, McNally & Co.

[2] Barrows-Parker, *Geography Journeys in Distant Lands*, Silver, Burdette & Co.

the pupil is asked to supply suitable descriptive words or phrases that might properly be used to tell what is in the pictures. Instead of the book presenting a mass of facts in an encyclopedic form, it has thrown together in a complete course a long series of tasks, problems, and projects that provoke thought and work on the part of the pupil so that he learns what he should as he goes along. The book does not just tell the child a lot of things and then ask him questions about what it has told him—the usual class method type of textbook—but serves rather as a series of opportunities for him to learn what he should.

There are two alternatives confronting those that are experimenting with the individual method. The first is to rewrite the textbook materials to fulfill the requirements for use with the method. This will require years because of the fact that publishers must be quite sure of a large sale for the book before they will go to the expense of printing it and placing it on the market. If textbook materials are rewritten for immediate use, it must be in some such form as is being so well done in Winnetka, Illinois. There, committees of teachers, through giving an unusual amount of extra time to the work, have actually rewritten large amounts of materials for use with the individual method. The objection to such a process is that textbook writing is an art, as well as a science, and cannot be done, other than in a tentative form, by those who have not made a special study or had special training in the process. It will not be practicable to ask classroom teachers to give the time from their regular work actually to produce texts in a permanent form. And yet the materials must be written as a result of a combination of actual classroom experience and a knowledge of the laws of learning in order that they be adapted to use by an individual child. Of course, this is true to a degree for any good text. It might be well to add that materials printed on a mimeograph often are produced with varying degrees of clearness, on varying qualities of paper, with a rather uninteresting appearance, in that it is not practical to supply the many illustrations and pictures that tend to make the textbooks more interesting to the pupils.

With the number of schools using the individual method rapidly increasing, as at present, it will soon be possible to produce, in a regular textbook form, the type of materials that is now being pro-

duced in several places in a tentative, mimeographed form. When this is done, it will be possible to have regular textbooks, written with the individual pupil's progress through the materials as the fundamental principle on which they are constructed. The different steps of a process will be developed in psychological order and adequate practice materials will be included in the same book. Keyed answer sheets for the drill and test materials can also be included so as to diagnose the child's deficiencies as he goes along, in such a manner that he can be referred to the proper drill work in order to remedy what is lacking. It may be well for the same author to produce a supplementary pamphlet of final tests, for the teacher's use. This book should contain answers keyed to refer to materials in the text, so that the teacher can indicate to the pupil, when correcting the test, just what work he should do to remedy the deficiency diagnosed by the test. It may be that in such a subject as arithmetic, special texts will be provided on special subjects. For instance, there may be a book on Fractions, one on the Fundamental Operations, another on Decimal Fractions and Percentage, another on Business Applications, etc.

The other alternative, until textbooks along the lines outlined above are produced, is to use the many fine books that are now on the market by supplementing them with assignments. This process is being used in many schools that are applying the individual method. The assignment furnishes what is lacking for the method in the ordinary textbook. That is, it suggests different lines of motivation for the work, states the purposes that control the doing of it, outlines tasks that are to be done, and supplies the explanations that are necessary in order that the child may progress without a large amount of help from the teacher. These assignments are mimeographed and placed in the hands of the pupils. They include practice tests and the necessary drill materials, although they may refer to one or more textbooks in which additional amounts of practice materials may be found.

The assignment is being used to supplement present textbooks successfully in several high schools and in some of the subjects of many elementary schools. In such subjects, as Latin or history, the assignment method is proving very practical.

However, it is necessary to have new textbook materials in such a

subject as arithmetic as soon as possible. There is no excuse for any school continuing the teaching of spelling by the class method for lack of suitable textbook materials because the word list of any good text in this subject fulfills the primary requirements.

The same general criticism that is made of textbook materials can be made also of standard tests. Most of them were written to test groups and to determine the average rating of the group. If not, they test only the general accomplishment of a pupil in a subject. For instance, a test in arithmetic might show that a pupil had a subject age of eleven years but would not show whether he needs more drill on Step V in Long Division or Step VI in Decimals. Or again, a test might show that the median of a certain class in geography was above standard, but might not point out the particular difficulty a particular pupil was having.

Many standard tests can be used with the individual method to determine when a pupil has reached the standard set as a goal for that particular child. Such a test as the Courtis Standard Test in the four fundamental operations of arithmetic enables the teacher to determine whether or not a particular child is able to add a column of figures of a certain length with the speed and accuracy set as a standard for the child to attain at that stage of his development. Standard handwriting, composition, and spelling scales are very useful for this same purpose.

In addition to the standard tests, there must be diagnostic tests in every subject, made to fit particular assignments or steps in that subject. These tests are similar to practice tests, except that they are corrected by the teacher. In several subjects, the multiple choice, completion, proportion, matching, selection, and similar types of tests are proving decidedly valuable because of their definiteness and economy of time.

In illustration: a child that has completed the work in multiplication of fractions takes the practice test that covers such problems as $\frac{7}{8} \times \frac{6}{7} = ?$ If his answer is $\frac{42}{56}$, the teacher would check it III to indicate the step (back in the development part of the book) to which the pupil should turn for further drill in the particular phase of the work that is giving him difficulty. On turning back to Step III

he would reread the development material and work again many problems involving cancellation. After he has done enough work to satisfy himself and the teacher that his trouble is removed, he will take another form of the same test taken before, to determine whether or not he is ready to take the final test.

Thus, while a vast amount of work must be done before the right kind of textbook materials and tests are available for use with the individual method, schools need not hesitate to adopt the method because of that fact. Enough progress has been made in solving the problem of materials for such subjects as arithmetic, spelling, penmanship, and language, in the elementary grades, and so many schools are now successfully using the method, that administrators and teachers desiring to give it a trial would find the question of proper textbooks and tests not a serious handicap. The written assignment or "contract" in high schools is making practicable the use there of present texts until the other type can be produced. The textbook problem will be solved as more schools use the method and bring about a more general demand—and market—for the right kind of materials.

C. THE DAILY PROGRAM UNDER INDIVIDUAL METHODS

By Carleton W. Washburne

In any attempt to individualize school work, the daily program is likely to be modified. One immediately asks himself if all the children in a class should do work on the same subject at the same time.

If work is individual at all, it is evident that either the time spent by one child on a certain subject each day will be less than that spent by another or the amount of work done will have to be greater for one child than another. Either arrangement is possible.

The first arrangement would result in the brighter children finishing each day's work in much less than a day. How to use the remainder profitably then becomes a serious question. The teacher's time will be largely occupied, under this or any other plan, in helping the slower members of the class: it will therefore be difficult for her to plan or supervise worthwhile activities for these quicker children, and the time saved becomes time wasted. Such children have been allowed to go home early, of course, in many schools, or have been set to helping the slower ones. While either of these devices may not be without profit to the bright child, few educators would consider them as adequate forms of individualization.

If all children are to spend the same time on each subject each day, the quicker ones will either progress more rapidly or do more work at each level. Having such children do more work at each level appeals strongly to many persons. The only serious objection to it is that in the elementary school, at least, such additional work is liable to be mere padding, and to offer no incentive to the child to work to capacity. When a child has reached a certain optimal speed and accuracy in long division, for instance, simply to give him more and harder long division examples to fill his time is not educating him.

Consequently, the present trend seems to be toward allowing children to progress as rapidly as their ability permits in the required subjects each day, making use of the saved time for large units of elective courses in the junior and senior high school as the children finish their required work.

There has been, on the other hand, a strong tendency to give each child freedom in the arrangement of his own time. This originated with Montessori, but got into public schools by way of Frederic Burk, and especially through Helen Parkhurst's Dalton Plan.

The Dalton theory of making each child responsible for his own job, of allowing him to continue uninterruptedly at a task he has undertaken, and of permitting him to use more time on the subjects which he finds hard than on those which for him require less study, has a wide appeal. The rapid and world-wide spread of the Dalton Plan idea bears witness to this appeal.

Burk, however, and following him, the Winnetka schools, have shown that many children, given this degree of freedom, waste much time. Children should earn the privilege of regulating their own time, they claim, and should lose the privilege if they abuse it.

Possibly the fact that Miss Parkhurst worked with select groups in private schools, and with high-school students, while Burk and the people at Winnetka have been dealing with elementary-school children, accounts in part for this divergence in point of view.

Under the Dalton plan every child makes his own daily program, except for times when he must attend conferences called by the teachers. In Winnetka, children are classified into "supervised study" groups and "self-reliant" groups, according to the teacher's judgment. Those in the "supervised study" group follow a program —usually, but not always the same for all—made by the teacher. Those in the "self-reliant" group arrange their own day very much as under the Dalton Plan. Any "supervised study" child may upon his petition be changed to "self-reliant" if the teacher feels that he has shown himself to be, in general, self-reliant, and any child in the "self-reliant" group who misuses his time, spending it on his favorite study or getting into mischief, may be transferred at once to the "supervised study" group.

Under either this plan or the full Dalton Plan, the daily program, in the old sense, disappears. The very fact of individual work breaks down the necessity for rigid time tables. When the work becomes flexible to fit individual differences, the daily program, too, becomes flexible and adaptable.

D. PROMOTIONS AND INDIVIDUALIZATION

By Carleton W. Washburne

In order to determine what type of promotion should be used under a system of individual work in schools, it is necessary first of all to decide what use is to be made of the time saved by the brighter children under such a system. There is, first of all, the question as to whether children who are capable of completing the required work of the schools in fewer years than now allowed should be permitted to do so and turned out into life at a younger age, or whether, on the other hand, provision should be made to use their surplus time in school for a broader and richer training than that accorded to slower children.

There are those who feel strongly that the idea that every child should finish the elementary school at the age of about 14, the high school at approximately 18, and the college at 22, is purely traditional and based upon the old habit of thinking in terms of averages rather than in terms of individuals. These persons contend that it is just as natural for some children to finish all their education in two or three years less time than is usually allotted as it is for slower children to finish their education in the regular period. They argue that it is from the ranks of the brighter children that our professional men and technical experts are to be recruited. The training required of such men and women is becoming increasingly long and arduous. A physician, for example, who takes the regular amount of time to pass through school, is not ready for practice until he has reached the age of 26 and usually has not achieved sufficient practice to enable him to settle down and marry until considerably later. Serious social problems arise from this long postponement of the time of marriage. Furthermore, large losses to society arise from the long unproductive period now being used for training. Any shortening of this long process would be, from this point of view, a welcome and needed solution to a problem which is becoming more and more serious with the increase of human knowledge and specialization.

The counter argument is to this effect: It is our business to use

time, not to save it. The more education we can give to the children during the few years we have them, the better their lives will be afterward. The specialization that the children are going to do later should be compensated for by as broad a range of interests and knowledge as possible. The brighter child should not try to speed through his schooling, but should rather broaden his interests and increase the range of his knowledge.

There is also the purely practical argument, which, for the time being, takes precedence in most people's minds over the broader issues raised above. Most children who enter the high school do so at an age not less than 14; most students entering college are not less than 18. To send a few individuals into the high school or the college at much younger ages is to put these individuals in an environment that is not fitted to them and to put them at a social and physical disadvantage. Thus, the child who enters college at the age of 15 or 16 often does not have the opportunity to participate in athletics that he would have two or three years later. While still adolescent, he is thrown with young men and women of comparative maturity. The same contrast applies also to very young children entering the high schools.

This argument is partially refuted by some people on the ground that if education everywhere were individualized there would be in every high school of any size and in every college, a young group who would naturally associate with each other and for whom athletic and social provisions would be made.

This being somewhat in the future, however, and the practical difficulties being more obvious to most people than the possible future advantages, the present trend of individual work seems to be to provide some means by which children will not finish school at too early an age, but will rather use the time they have saved through individual work for a broader education.

The place for this broader education may be in each grade as the child goes along, or in the junior or senior high school. If it is in grade, promotions will usually be annual, and the class will move forward as a whole. If it is in the junior or senior high school, the children will move forward through the lower grades as individuals and as rapidly as their ability permits, until they reach the junior or senior high schools, where a wide enough range of electives and

special courses will be offered so that the rapid child may use profitably the time he has saved in the lower grades. There are advantages and disadvantages in both plans.

Under the first plan there is a minimal course of study for every child. This course is presumably based upon what the slowest 'normal' children can accomplish in a year. Beyond this minimum there are all sorts of additional and special assignments—by-paths which the brighter children can explore if they have completed the minimal assignment for the day, week, or month, as the case may be. The advantages of such a plan are, first, that the children are constantly kept with others of their own chronological age; second, that the teacher is able to conduct group explanations and discussions which require less of her time than individual explanations; and third, that the group and creative activities of the class may be much more closely correlated with strictly individual activities than under the other plan.

The first disadvantage, aside from the impossibility, under this plan, of permitting children to finish school at a younger age than is now customary, is that it is almost impossible with non-departmentalized work in the grades to provide enough really educative material to use to advantage the varying amounts of time saved by each child. A teacher with thirty to forty children in her class can not very well see that each child, as he completes each unit of his work, is provided with the right sort of educational material. For one thing, the classrooms themselves are not equipped for a wide enough range of activities. It may, for example, be more profitable to a certain child to use his saved time doing shop work or experimenting with radio or practicing music than in doing a 'plus assignment' in formal grammar or reading more books. Yet, in undepartmentalized lower grades such activities would not only require unusual equipment, but would often be disturbing to the rest of the children.[3] Consequently, the attempt to give plus assignments often results in merely filling the children's time with 'busy-work' or padding their course of study with unnecessary and often useless detail. The prospect of having to do such plus assignments does not tempt

[3] Some of these disadvantages could be avoided by the platoon plan. Many thoughtful people and experienced teachers, however, gravely question the desirability of departmentalizing and platooning the primary grades.

the child to complete his minimal course of study as rapidly as possible. On the contrary, he may be tempted to loaf along so as to avoid extra work.

The other plan makes promotions strictly individual and by subjects, up to the junior or senior high school—preferably to the junior high school, if there is one. There is a single course of study for all children, consisting of those subjects which will be valuable to every child. Each child completes this course of study at his own rate. When he has completed all his work of the lower grades, no matter what his age is, he enters the junior high school. Here he is given as wide a range of electives and special courses as possible, in addition to such required work as the junior high school may provide. His whole time is used and he may even spend an additional year in this junior high school, following out his special interests or filling out his special needs, after all the required work is done.

The advantages of this plan are these: First, if in the case of any particular child it seems desirable to allow him to complete his school work at an age somewhat younger than the traditional one, this may be done. Second, the child is encouraged to work to capacity all through his school life, with the reward of more rapid promotion and an opportunity to follow out his special interests later. Finally, it becomes possible under such a system to use the time the child has saved to the best possible advantage, for it is in the junior and senior high schools that centralization and departmentalization bring about a wider range of activities and a greater amount of equipment than can possibly be had in the lower grades.

There are, however, certain disadvantages. The outstanding one is the difficulty of correlating group activities with the individual work. This is particularly true in the social studies. Here it is almost essential to have a group working on a particular topic together. Even those schools which most urgently advocate strictly individual progress and promotions, usually make some provision by which the social studies may be excepted. One method of doing this is to require each child to complete a certain topic in social studies (including, of course, history and geography) as an individual. Before beginning the next topic, however, he must wait until at least three-fourths of the children in the group are ready for it. He may use his excess time either to explore further in social

studies, which offer an unusually rich field for such exploration or to work on his more completely individualized subjects. In this way it is possible for class discussions, dramatizations, and projects to go hand in hand with the individual work in the social studies. This single exception to individual progress does not seriously interfere with the general scheme. If a child completes six years of work in five in all the other subjects, it is merely necessary for him during the last year of the five to carry a double load of social studies, one slowly with the rest of the class, the other rapidly as an individual.

Another problem that arises in connection with this plan is that of the preparation of materials. When explanations to the entire class are made impossible by the varying degrees of progress of its members, self-instructive textbooks become necessary. Most textbooks are not written directly to children, but assume that the teacher will explain more fully all the difficult points. Little by little self-instructive texts are being introduced to meet this difficulty. For the time being, however, the lack of suitable materials is probably the greatest deterrent to permitting children to progress as individuals.

Under a system of individual progress the question arises as to whether or not a child should complete a grade's work in all subjects before he goes on to the next grade's work in any one subject. There seems to be no valid reason for insisting on a complete evening-up of all subjects before allowing a child to go on to the next grade's work in any one subject. There are, however, strong reasons for keeping an approximate evenness of progress in all subjects: a child may be transferred from an individualized school system to one which is on the old basis, in which case any great unevenness would be a distinct drawback. Furthermore, the time will ultimately come, either at the end of the sixth grade or at the end of the junior high school, when such an evening-up becomes almost essential; if a child is two or three grades farther along in one subject than in another, the latter part of his school course will have to be very one-sided in order to bring up the slowest subject. An evenness of progress all along the way is certainly preferable to this. The child who is advancing very rapidly in some subject should be required to use less time on that subject and to put more time on the subject in which he is farthest behind.

Under the plan of individual progress, again, the question arises as to the basis for grouping children. It is, of course, possible to keep all children of the same chronological age together, since the individual work of one child will not interfere with that of another, even though they are at different stages. One reasonably successful method of grouping children has been to put in the same room children who are apparently of the same "social age." This social age is determined by the teacher through watching the children on the playground and in class and noting the approximate age and grade grouping of a child's playmates. There is no exact rule for determining a social age, but under a plan of strictly individual progress a child can readily be transferred from one room to another, if he does not seem to fit in the room to which he has been assigned. The time will come, however, when the brighter child has completed all of his individual work, and is ready to enter the junior or senior high school at an age younger than his fellows. All such children can then be grouped in that junior or senior high school so that they have plenty of companionship of their own age. They can then use their saved time in special and elective courses and need not enter upon the next higher stage of their educational career until they have the necessary maturity.[4]

Either plan of promotion—the class plan by which the brighter children do extra work in each grade, or the individual plan—requires careful preparation and some adjustment. Either plan properly carried out will provide for individual differences. The second plan, however—that of allowing children to progress strictly as individuals through the lower grades and then giving them an opportunity to carry on diverse activities according to their individual interests, or abilities, or needs, in the junior or senior high school—probably results in the more complete adaptation of the schools to individual differences.

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[4] It may be pointed out that superior intelligence tends very definitely to be associated with superior health and earlier physical and social maturity. See the reports by Terman and by Terman and De Voss in the *Twenty-Third Yearbook*, Part I, Chs. IX and X, where an elaborate investigation justifies the statement (p. 184): "Surely there is no good reason why most children of 140 I.Q. or higher should not enter the high school at 12 years and the university at 16."—*Editor.*

E. SIZE OF CLASSES

One of the most frequent questions in regard to individualization of schools is as to whether more teachers are required—whether classes must be smaller. Sutherland, in Los Angeles, has held that there should not be more than thirty-two children to the class. Winnetka has only thirty. Yet Detroit and Racine have forty, and Miss Mackinder, with the hardest grades of all to individualize—the primary—has had to assign 45 to 54 children to each teacher. In spite of this, she has done remarkable work in individualizing her school—but she doesn't believe in such large classes!

Large classes, therefore, seriously decrease the advantages of the individual method, just as they prevent good class work. Little children cannot be adequately educated in masses of forty-five to fifty-five under either individual or class methods. A teacher ought not to have more than thirty-five children in a class. If she has more, her work will suffer; but she can make shift, and even in large classes the children will profit by making the conventional class method give way to individual work.

By Jessie B. Mackinder

I believe that the same teacher, teaching any reasonable number of children, *en bloc*, as a class, would obtain, in the long run, better results with the same number of children by using individual methods.

I think we should not have more than 35 children. The larger the class, the longer the time required to bring the class to a given level by either method. But in addition to giving better tangible results in the long run, individual work will produce children more able to continue their own education and with a happier attitude toward life's difficulties than children brought up on class work. The child who has from the beginning of his school life been obliged to shoulder the responsibility for getting a job done will not be likely to blame somebody else for his failure to achieve when his school days are ended.

In a large class it is not possible to give every child enough

attention to allow of his proceeding as quickly as he could were his teacher never obliged to keep him waiting.

But the partial, or perhaps apparent, retardation of the quick learning child is a less serious fault than the complete retardation of the slow learning child by preventing his sure building of the foundations of future ability to learn or of the foundations of character which will enable him to use his limited ability in the best way.

One of the faults of class teaching has been the retardation of the quick child, but I am now speaking of the child under eight years of age, and I do not think so young a child will be injured by the enrichment of his building in the foundational stage rather than rapid passing from stage to stage, so much as the slow child will be injured by the laying of insecure foundations or the formation of a conviction of his lack of ability.

For example, clever A. B. may have completed one stage in arithmetic and may be unable to pass to the next until his teacher can give him some attention. But he need not necessarily waste his time. He can read a geography book for pleasure whilst waiting. If the class were smaller, A. B. could have the attention he needs when he needs it, and that would be the most desirable thing. But if a large class makes the most desirable unobtainable, we must choose the next most desirable thing possible to us, until public opinion will demand the best.

As the teacher works on individual lines and realizes how often a child is kept waiting, she more and more ardently longs for smaller classes so that she may "get to" each child more frequently. In actual practice teachers of large classes are driven to a compromise and have to keep certain members of a group together, instead of allowing every child to go ahead at his own rate, in some subjects.

By the class method the quick child was kept waiting longer and the slow child never caught up. He became discouraged because he formed the retardation habit.

In one school I know, the enrollment has ranged from 48 to 54 all the time individual work has been used. The teachers often said they could get the children as far by having half of any class for half the day, in school, in any period, as they can when the whole

group attends all day. This is a feeling, merely. It has not been tested. But in this school of 500 children the headmistress, who is, of course, not tied to any class, has for the past three months taken the A section of three classes out of the classrooms for class lessons in singing, story telling, scripture, and similar largely inspirational subjects. At another period of the same day she takes the B section of these same classes for the lesson given to the A section previously. This leaves each of the three class teachers for two periods in each day with half their class. The large group of about 75 children of about the same age can be so taken for these mass subjects, and the class teachers have found great relief, because the children who remain with them can get through the work more quickly because they do not have to wait so long between jobs for the teacher's attention. The actual time spent by each child in each kind of work on the school time-table is the same as it was, but, of course, this would be impossible were the head teacher unable to participate in this way in the work.

The greatest difficulty is found in the classes where the children cannot read. When they can read, there are many things of interest for them. Until they can read, the jobs they are able to do are such as need constant assessment, correction, or help from the teacher.

The younger the children, too, the less capable are they of sustained concentration on one job. They must have frequent changes. A change from one job to another should involve the checking of the first by the teacher before another is commenced. With large classes this is impossible—at any rate it is impossible in the writer's school, so far.

F. SUPERVISING THE WORK OF INDIVIDUAL CHILDREN

Individual instruction involves supervised study. The teacher who, under the lock-step methods, had to be at the front of the room hearing recitations, under individual methods is down among the children helping this one, encouraging that one, checking up on each child's work. She is a teacher of children rather than a hearer of lessons. Her problems are here discussed by Miss Mackinder.

By Jessie B. Mackinder

The younger the child, the more frequently must he be able to change his job and the more frequently must he be shown what is the next step for him.

When he first comes to school, he often has either suffered from lack of continuous occupation in a poor and overcrowded home or has been 'played with' by older children and has not learned to depend upon himself for occupation.

The result is that he must have, in each stage, an immediate objective which he can reach in a very short time, so that he very frequently tastes success, and by quickly completing one job and taking a different one, can have many changes but train himself to work alone.

Gradually, as the habits of 'busy-ness' and of success are formed, the child's *will-to-work* and the teacher's careful grading of material will lead the child to longer and longer jobs. I have been in the room with a set of 50 children, from 6½ to 7¼ years of age, where the teacher was absent for two hours, doing my own work and giving them no help. They needed no word from me.

I do not think it wise to allow children to work for that period without supervision at that age, because their errors are so many that the teacher must check every exercise to prevent the memorizing of errors by their repetition. Every exercise should be checked and corrected in the child's presence, immediately after it has been written. He is laying foundations in all subjects and in all habits. It is well to insure that every brick is well and truly laid, so that the superstructure may be secure.

Whatever the method of teaching may be, this very careful supervision is necessary. In individual work, carefully graded and recorded by the teacher, this supervision is essential to the plan. In class work it is possible for the supervision to be less personal to the child and less thorough on the part of the teacher, and for both to be unaware of the fact.

If a child knows that the proper completion of one stage is necessary to his passing to the next, he demands assessment, he wants supervision, instead of feeling lucky when the class teacher did not notice his bad work.

I think if the young child had this careful supervision in his early years, the child of twelve would be a self-reliant student, needing no more supervision than the majority of college students should require.

By the adoption of a careful method of recording progress from stage to stage, the supervision of a small class is simpler than that of a large class, in that it is more thorough.

When a class teacher marks off in her record every letter a young child learns, she can direct his attention to those he does not know, and she will see that he does not waste time on the known ones, but concentrates his attention on those he has still to learn.

When another child brings a set of sums correctly worked in a new rule, this, too, is recorded. Day by day the teacher looks down her record and draws the attention of any child to any particular detail in which he is falling behind.

A certain type of teacher finds the command of a class a very trying business. This particular type of teacher will find that individual work gives her such an intimate knowledge of the children that her disciplinary troubles will disappear. They will disappear with any type of teacher so long as the children are kept enthusiastic and busy.

Many most valuable teachers were wasted by the strain of the drilling of large heterogeneous classes, but have found their true vocation when they could come into contact with the individuals of their class. In very many cases these teachers are the truest disciplinarians. They call forth in the children their own powers of self-control, and the children learn the discipline of freedom and work. It is just these teachers who were in the old days quite miserable in the marshalling of companies by fear.

G. TRAINING TEACHERS FOR INDIVIDUAL WORK

The attitude of the teacher is undoubtedly the greatest single factor in making individual work successful. How to bring about the right attitude is therefore the most pressing single problem in the whole program of individualization. The studies reported below by Courtis bring this problem out in bold relief. The comparative uselessness of the technique of individual work in the hands of the class-minded teacher, and the contrasting value of this same technique in the hands of the teacher who, through personal training by a supervisor, has grasped the underlying ideal, is forcefully presented by means of accurate experimentation.

By STUART A. COURTIS
Detroit Teachers' College

While the ideal of "adjusting work to individual needs" has been preached for many years, almost all teachers in service have received training in a form of mass instruction which centers responsibility for the control of the learning process in the teacher. The conventional conception of teaching is "*doing* something to the child" in contrast with "*assisting* the child to do something to himself." It is possible for a teacher to use individualized material exactly as she has always used textbooks, blackboards, etc. When so used, the material does not function and produces only conventional results. True individualization of instruction involves a change of view, a shift of emphasis. The maximal benefit from the new methods of work cannot be secured without such an awakening of the teacher to the fact of individual differences that she *makes for herself the generalization* that it is impossible for one human being to plan adequately for another and futile to try. Once this stage is reached, she will see that true teaching consists in 'salesmanship' and 'service.' She will at once take the child into partnership and strive to help him help himself to learn.

Detroit has attempted to bring about this essential change of standpoint in its teachers in three ways: (1) by general supervisory visiting; (2) by modification of training courses in the city

Teachers College; and (3) by direct control of a few selected teachers by a special supervisor during the period of experimentation.

The following data are presented as illustrative of the relative effectiveness of the three methods.

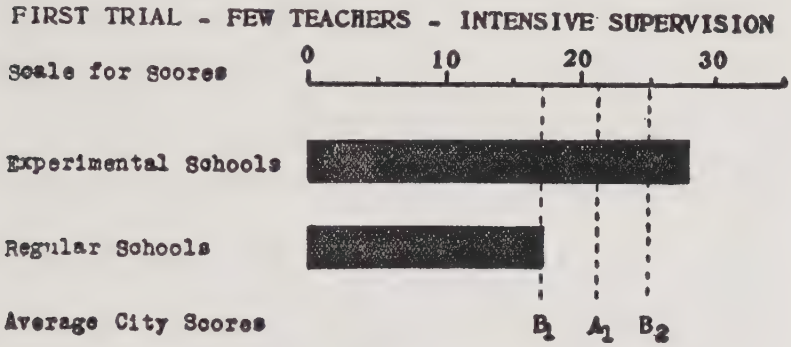

FIGURE 1.

In January, 1922, a careful control experiment was conducted to measure the effect of the newly devised individualized material for teaching reading.[5] Five selected teachers received direct and

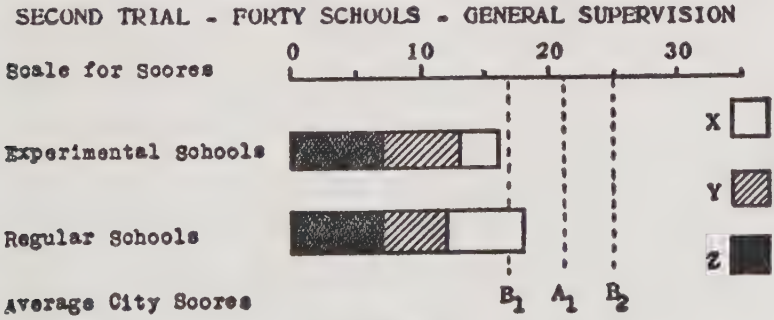

FIGURE 2.

continuous training and supervision in the use of the new material. The results are based on 180 children in four schools, matched in age, sex, and intelligence with 180 children in four other schools.

[5] See pages 198 ff.

The schools chosen represented four different levels of social conditions, and the attempt was made to equate teaching ability. The data are shown in the graph.

These results were presented to the teachers and principals of the city schools and opportunity given to those interested to volunteer to try the new material during the following semester. Forty schools responded (approximately one-third of the whole number). A comparison of their scores at the end of the semester with those of the 80 schools following the regular course of study shows minor variations only (see Fig. 2).

Yet the teachers concerned were a selected group in that they were interested enough to volunteer, and they were under general

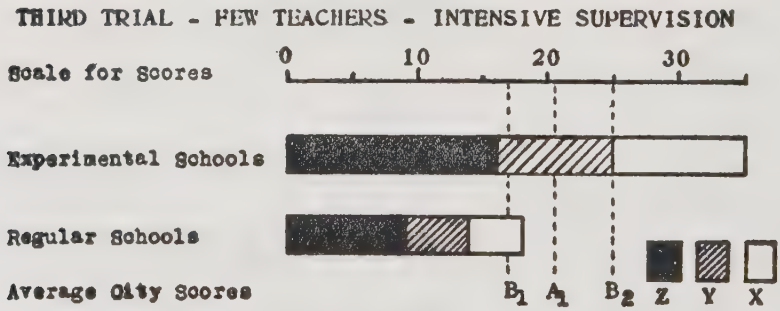

FIGURE 3.

supervision during the period of trial. Moreover, many of them had learned of the new material and had been instructed in its use through Teachers College courses.

During the semester from September to June, five schools were again selected for special training and study, and one person devoted a large proportion of her time to the task of supervision. Comparison with five other schools selected as equal to the first gave the results shown graphically in Fig. 3. It is particularly interesting to note that in the schools with special supervision even the Z (inferior) children exceeded the score made by the X (superior) children in the other group.

In the meantime the demand for the new material was steadily growing throughout the city. Eighty schools were now using the material. Change in the testing program of the city had necessi-

tated certain changes in the records. The scores of the next semester, therefore, are not comparable with those previously given, but are indicative of the relative achievement of the two groups. Again, the effects of the new material on the reading test score for the experimental group as a whole were not favorable (see Fig. 4), in spite of the fact that the concomitant benefits from the new method in better attitudes toward reading and in growth in powers of self-direction were winning over many teachers and principals.

Analysis of the class scores for this period shows that the large gains made by 29 percent of 100 B-1st teachers are offset by the losses made by 27 percent of the teachers who did not succeed. At

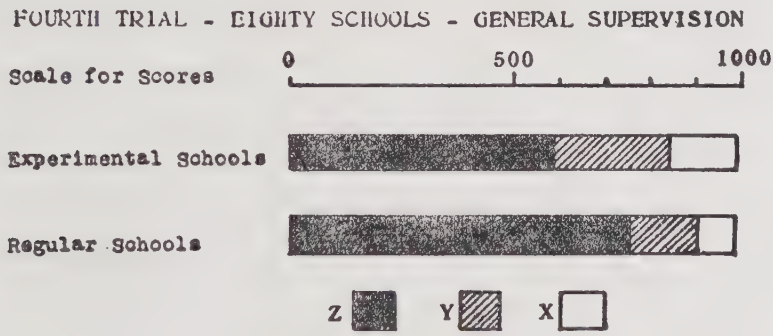

FIGURE 4.

present, the attention of the department is being given to devising more effective ways of supervision. For it is quite evident that in spite of the possibilities of the new material and its rapid growth in favor, effective use demands something more than mere outward conformity with the form of individualizing classroom procedure.

The conclusions from these and similar experiments are (1) that individualization of instruction involves a radical change of point of view in teachers; (2) that the most effective way to bring this change about is intensive and continuous supervision by an expert; (3) that teacher training courses serve to bring new points of view to the attention of teachers and to prepare the way for a

trial under classroom conditions, but are not in themselves productive of power; (4) that general supervision has very little effect in bringing about radical changes in point of view on a large scale—its function is rather to assist in holding a given type of work up to an effective level; and (5) that more effective forms of supervision and teacher training must be devised before there can be efficient individualization of instruction. Under existing conditions, changes in the right direction can take place in a system of any size only very slowly.

H. SUMMARY

By no means all of the problems connected with the individualization of instruction have been discussed in this section. Enough have been included to make it evident that much thought and experimentation are necessary before a perfect way of fitting schools to individuals will be found. Enough, too, have been discussed to make it clear that schools can adapt themselves to children in a variety of ways, any one of which is better than to fail to make any adaptation.

Bobbitt has shown that individual instruction, if it is to fulfill its purpose and promise, must go much farther than merely to provide an efficient vehicle for the old curriculum; its greatest value lies in the possibilities of using it for a functional, rather than an academic education. Stoddard has described the kind of texts and tests that will have to be written before even the old curriculum can be satisfactorily individualized; but he has shown how one can temporarily use the best of the available materials and at least move a long way toward adaption to individuals. The discussion of the daily program, and that of promotions, open up several methods of individualization, any one of them freer and more adaptable than the traditional scheme, each with its practical difficulties and each with its own advantages. Miss Mackinder has spoken from personal experience, both of the possibility of individual work with large classes and of the undesirability of classes larger than 35. She has also shown something of the problem of supervising each child's work under individual instruction. This leads naturally to Courtis's contribution on the training of teachers; he has brought scientific evidence to bear upon this problem, and has demonstrated that individual methods employed by teachers who have not the individual point of view are of relatively little value. It is fundamental, therefore, to give each teacher the ideal of adapting her work to the needs of each individual child.

These discussions tend to focus thought on some of the problems of individualizing schools. From such thought will grow experimentation. From that will come scientific data. And these will gradually lead to the solving of the problems.

SECTION V

A PROGRAM OF INDIVIDUALIZATION

By Carleton W. Washburne
Superintendent of Schools, Winnetka, Illinois

This section is intended as a manual for those who are interested in reorganizing their schools on an individual basis. The reasons for individualizing the schools have already been presented. The results of such individualization have been discussed. The problems involved in adjusting schools to individuals have been entered into and various solutions offered. In this section are brought together certain of the salient ideas and successful practices of various attempts at individualization. The foregoing parts of this *Yearbook* make it perfectly clear that the method of individualizing work presented in this section is not the only possible one. There may even be disagreement as to whether it is the best one at present worked out. This much can be said for it, however: each step has been worked out successfully in one or more schools. It must be a workable program, because it is a program that has worked and is working.

A. General Technique

The first step of all is the reorganization of the curriculum.

Certain knowledges and skills in the curriculum are needed by every child. These must be isolated—on paper at least—and stated in very definite terms. To say that a child must learn long division, for example, is not sufficiently definite. To say that every child shall be able to divide four-place dividends by two-place divisors, involving a naught in the middle of the answer, a naught at the end of the answer, a remainder or a trial divisor, and that he shall be able to divide such examples at the rate of two in three minutes with 100 percent accuracy, is a definite statement. To say that every child shall know about the discovery of America is vague. To say, on the other hand, that every child should know that it was Columbus who discovered America in 1492, that Columbus discovered it in a search for a shorter route to the Indies, and that he was outfitted by Queen Isabella of Spain, is to state definitely what is expected of

the child. This statement, naturally, in the case of history, is not to go into the child's hands, as a mere memorization of isolated facts is not desired, but it is essential for the teacher if his work is to be individualized, so that the particular facts which are essential to every child (assuming that those mentioned are essential) may receive due stress and be adequately tested.

Let us call these knowledges and skills, stated with the utmost definiteness and needed by all children in common, the *common essentials.*

There is another highly important part of the curriculum—the socialized and self-expressive activities. These activities have not for their purpose the mastery of subject matter or skills needed by all children in common. They provide opportunity, however, for children to work together, to learn co-operation, to sense the interdependence of the members of the group or of society. They provide an outlet for a child's creative energies; an opportunity for each child to express something of his individual self as differing from all other selves. In this field would come not only activities, but 'exposure' subjects. A child may be 'exposed' to good music, or fine art, or great literature, not with the intention of demanding any certain knowledge of it, but with the purpose of giving each child an opportunity to get from this exposure that which fills one of his own needs or develops one of his interests or abilities.

It is fundamental, in any plan of individualizing work, to provide not only for individual mastery of the common essentials, but also for activities in which individuals may express their differences and in which they may learn to co-operate socially with other individuals.

When the common essentials have been clearly defined, a means must be found of testing children in their mastery of these essentials. Such tests should partake of the nature of objective, standardized tests, but should be more searching than most of these. Each specific phase of the subject—each person, place, or event, for example, in history or geography, or each possible difficulty in long division, or each combination in column addition—should be distinctly tested. A test, therefore, will consist of a number of parts; each part will measure the grasp of one phase of the topic. It is only in this way that the testing can be diagnostic, can show where the particular difficulty of every child lies.

To be diagnostic, a test must of course also be quite objective; there must be only one possible right answer. A true-false test is of no use for this purpose, since any particular question has an even chance of being correctly answered by guess work. The manipulations by which true-false tests are scored may serve to determine the general ability of a child in the subject tested, but they do not help at all to discover the specific needs of each child.

Consequently, multiple choice and completion tests are the only types that are satisfactory. A multiple choice test should present at least four alternatives; and a completion test should be so devised that there is only one possible right word or number to be supplied.

More difficult than the preparation of complete, diagnostic, objective tests in the common essentials, is the preparation of suitable self-instructive material. It is the dearth of such material which has held back the progress of individual work in the schools. Most texts are written with the expectation of class elucidation. It is only recently that a few texts have been published which are readily adaptable to pupil self-instruction.[1]

Until it is possible to secure such texts in all subjects, it is necessary either to mimeograph one's own texts (a stupendous job) or to use some of the texts that have been mimeographed by schools operating under an individual system or to supplement ordinary textbooks with mimeographed assignment sheets and supplementary explanations and practice materials. The latter is probably the most universally applicable method until enough suitable texts are on the market.

Such assignment sheets may be mimeographed and bound together in a booklet for each child. One such booklet then accompanies each textbook. Many of the San Francisco State Teachers' College "Bul-

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[1] Among these are the following:
Mabel C. Hermans, *Studies in Grammar*, Henry Holt and Company.
Sterling A. Leonard, *General Language*, Rand McNally Company.
Horn-Ashbaugh Speller, J. B. Lippincott Company.
Carleton W. Washburne, *The Individual Speller*, World Book Company.
Washburne and others, *Individual Arithmetics*, World Book Company.
Carleton W. Washburne, *Common Science*, World Book Company.
Mary A. Ward, *Pupils' Self-Instruction Arithmetic*, Rand McNally Company.
Stuart A. Courtis, *Standard Practice Tests in Arithmetic and Handwriting*, World Book Company.
Stuart A. Courtis, *Picture-Story Reading Lessons*, World Book Company.
The McFadden Language Series, Rand McNally & Company, Chicago.

letins" consist entirely of supplementary lessons and explanations of this sort to accompany the state-adopted texts. Let us call such supplementary materials *assignment booklets.*

Before writing an assignment booklet to accompany any textbook, it is first necessary to have made the list of specific objectives for the subject of this text, and it is desirable to have made the complete diagnostic tests which are to show whether or not a child has reached the objectives. Then, for each objective the text to be used will be examined. The assignment booklet will contain a statement to the child as to what he is to try to get from the text. If the explanation in the text for any particular objective is not sufficiently full or clear, this will be supplemented in the assignment booklet. If the amount of practice work or the number of exercises in the text are inadequate, these, too, will be supplemented in the assignment booklet, with directions to the child as to which exercises are to be done. It is desirable to have in the booklet separate sets of exercises for each objective, so that if a child does not succeed in doing the first set perfectly, he may try again on the second, and if that is not perfect, on the third or even the fourth. Few textbooks contain enough practice materials for such thorough work. The assignment booklet therefore will usually contain alternative sets of exercises to be done in case the exercises in the textbook are not done perfectly.

One of the essential features of the assignment booklet is a set of answers to all exercises. The exercises themselves must, as a rule, be so devised as to permit self-correction. If provision is not made for self-correction, the amount of written work to be corrected by the teacher will be inordinately large. The danger of cheating in self-correction may be partly avoided by supervision, but is chiefly avoided by the fact that each phase of the work is going to be tested completely by the teacher with a diagnostic test. The child's progress will depend upon his success in the tests, not upon the correctness of his daily practice work. There is no more temptation to cheat one's self under such a system than there is for a runner in preparing for a race to cheat himself as to how fast he can run when he is practicing for the race.

Wherever possible, the assignment booklets containing the assignments, supplementary explanations, supplementary practice ma-

terials, and answer sheets for self-correction, should be mimeographed or printed. Where this is impossible, they may be hectographed, or even written upon the blackboard and copied by the children. This last, while not entirely satisfactory and while consuming much of the child's time, probably consumes less time than is wasted under the class recitation system.

Some form of record keeping is necessary, since each child is mastering each phase of each subject at his own rate. For the teacher, a class book with a list of the tests of any particular

Subject Language Pupils' Names Alphabetically Last Name First Name		Review Test	Possessives Test 1	Possessives Test 2	Possessives Test 3	Comma, Series	Comma, address	Comma, Yes, No, Oh	Quot - Simple	Exclamations	Cap. Betty	Paragraphs	Use of Dictionary	Review Test	32 Divided Quot	33 Indirect Quot	Review Test
Anderson, Roy	9/18/23	9/30/23	10/2/23	10/8/23	11/15/23	12/7/23	1/11/24	1/15/24	3/18/24	3/22/24	3/8/24	3/10/24	3/25/24	4/2/24	11/18/24	11/24/24	12/3/24
Atkins, Jack	3/4/23	9/7/23	10/1/23	12/4/23	1/11/24	3/3/24	3/8/24	3/18/24	11/1/24	11/14/24	11/24/24	4/1/24	10/8/24	11/4/24			
Bakkens, Gladys	1/20/24	3/4/24	4/8/24	5/7/24	5/20/24	4/8/24	12/6/24										
Balkow, Evelyn	9/18/23	9/30/23	10/8/23	10/18/23	11/8/23	12/6/23	1/17/24	1/17/24	3/11/24	3/4/24	3/14/24	4/2/24	12/4/24	12/20/24			
Cooney, Charles	11/1/23	12/4/23	1/5/24	1/17/24	1/25/24	3/7/24	4/8/24	6/1/24	12/3/24	12/18/24							
Cutting, Fay	4/8/24	3/4/24	4/8/24	4/9/24	10/8/24	12/2/24											
Day, George	3/3/24	3/4/24	5/7/24	10/1/24	12/1/24												
Doran, Mabel	4/7/24	3/8/24	3/27/24	3/8/24	4/7/24	3/17/24	9/15/24	10/1/24	10/9/24	11/8/24	12/3/24						
Doughty, Lena	9/20/23	11/2/23	12/4/23	1/15/24	2/4/24	4/8/24	10/7/24	9/12/24	12/19/24	12/6/24							
Ehrler, Will	3/4/24	3/7/24	10/1/24	12/1/24													
Flynn, Frank	4/2/24	10/1/24	12/4/24														
Gorman, Ben	9/24/24	11/1/24	12/4/24														

FIGURE 1.

subject across the top of the page and a list of the children down the side of the page, will provide the necessary form for records. When a child has passed a test perfectly, the date will be recorded after that child's name and under the name or number of the test. Such a record provides a graph of the progress of the entire class; a long series of dates after one child's name and a short series after the name of another child, shows the former child to be much more advanced than the latter. A glance at such a record shows at once which children need stimulating and help. It will, of course, be necessary to have a different page or part of a page for each

individualized subject. Figure 1 shows a part of one such page as used in an individualized school system.

For the child himself, a similar list of tests or objectives in each subject may be mimeographed or printed, and the child's progress recorded by entering the dates of the tests as they are passed. A series of parallel columns on a large card, each column containing

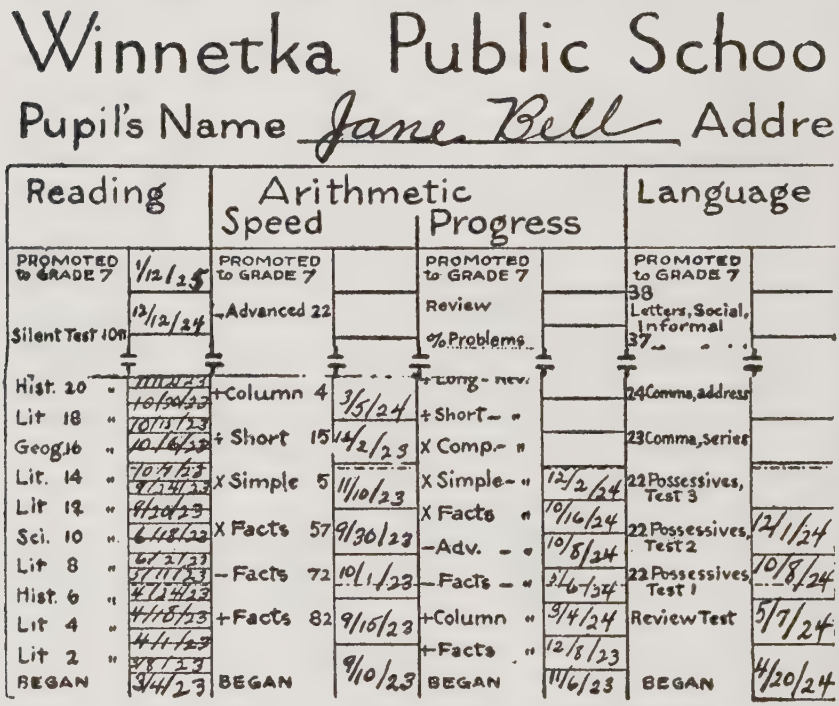

FIGURE 2.

in abbreviated form the subjects of the test the child has passed, may be used conveniently for such a record. The column of dates beside each column of test titles would show the child's progress. The whole card would present a graph of the child's progress in all subjects; the highest columns would show those in which the child is making the most rapid progress, the lowest ones those in which his progress is slowest. A facsimile of a part of one such record card is shown in Figure 2.

With the foregoing system of definite objectives, complete diagnostic tests, assignment booklets, and records, it becomes possible to abandon recitations and allow each child to move forward through each unit of his work at his own rate. The testing function of the recitation will be taken care of much more adequately by the diagnostic tests. Such socializing elements as there are (or are supposed to be) in the recitation will be handled by the socialized and self-expressive activities described a little later.

In the abandoning of the recitation and in substituting for it the system of individual work and tests just described, one saves a considerable amount of time each day. It will be found possible to use at least one-third, and even up to one-half, of the day for socialized and self-expressive activities, and to confine the work in the common essentials to two-thirds or one-half of the day.

When a child has finished a textbook or a list of objectives in any subject, he will proceed to the next unit of work, unless there is some one subject in which he is very far behind. In this case he will use his saved time to bring up the subject in arrears.

Children will be grouped more from the standpoint of the socialized and self-expressive activities than from that of the common essentials. In socialized activities it is necessary that children fit well together. If some are a year or two ahead or behind the others in the strictly individual work in arithmetic or language or spelling or writing or reading, it will not interfere seriously with their participation in the socialized activities. It may be necessary, however, for them to do the history and geography work at the same time and at the same rate as the children with whom they are grouped, for these subjects are often correlated with the socialized and self-expressive activities. They are primarily socialized subjects and it is less necessary to individualize them completely than it is the tool subjects.

The part of the day devoted to socialized and self-expressive activities should be as free as possible from requirements and formal work. This should be the opportunity of the teacher and the children to follow out natural interests, to develop self-reliance, initiative, and originality, to thresh things out together or to cooperate in projects.

The projects carried out in this socialized part of the day will

never be for the purpose of teaching subject matter. Such teaching may incidentally result. A stimulus to the learning of subject matter would be a desirable outcome of some of the socialized work, but the project should be mainly for the purpose of training children in co-operative activity. The project should not be stretched to 'bring in' some subject which the teacher wants the children to master. The project should be as much as possible of the children's own making and planning. To it each child should contribute his own special strength. In it each child should find his own weaknesses complemented by the strong points of others. Division of labor, co-operation, the merging of one's personal welfare in the welfare of the group, rather than mastery of subject matter, should be the outcomes of projects. Undoubtedly, subject matter learned in the individual part of the day will often find motivation or application in the projects, but this should be incidental and never forced. To the child, each project is an end in itself.

Field trips; opportunities to develop appreciation of art, music, or literature; discussions of live issues; self-government; dramatization; hand work of all kinds; and group projects, would fill the part of the day which is saved through the individualizing of the common essentials. *These socialized and self-expressive activities are to be given as much dignity and importance in the school curriculum as is the mastery of the tools.*

There is no such definite technique for the socialized and self-expressive activities as there is for the common essentials. By their very nature they must be informal and spontaneous. They will differ from group to group, from teacher to teacher, from year to year. They are opportunities rather than requirements. Fortunately, their interest value is high enough, if they are properly handled, to enlist the full attention and activity of the children without formal credit.

The individual work in the common essentials provides for children's differences in ability to master commonly needed knowledges and skills. The socialized and self-expressive activities provide for the differences in children's interests and abilities through giving each child an opportunity for self-expression and an opportunity to contribute his part toward the welfare of the group. The full development of both of these parts of the curriculum is essential to thoroughly individual work.

B. Steps by Which to Introduce Individual Work

The general technique of individualizing schools above suggested cannot be incorporated bodily and instantly in a school system. It must be introduced little by little; it must be the result of growth.

The first step toward individualizing work must be that of securing the interest and co-operation of the teachers who are to experiment with it. It is not necessary that all teachers begin at once. It is better to select a few teachers whose enthusiasm and ability augur well for the success of the undertaking than to attempt to begin the work with a number of half-hearted, half-convinced members of the staff.

One should begin with the easiest subjects to individualize, so that the idea of individual work may be developed without swamping the teacher with too many preliminary details. The subjects most easily individualized vary in the different grades. In Grades I and II, sight words, phonics, and number combinations are probably the most easily individualized subjects. Spelling and reading are easiest in the intermediate grades; mathematics, shop, and perhaps grammar, in the junior high school; and mathematics, laboratory work, shop, and Latin in the senior high school. Each of these may now be considered briefly as illustrative of the type of work that would be done at the beginning of an attempt to individualize a school.

1. The Primary Grades

The sight words in the primary grades are usually definitely determined in each school system. The most scientific list for the first grade is probably that contained in the teachers' edition of the Buswell and Wheeler *Silent Reader,* although the lists published in the 17th and 20th *Yearbooks* of this society are also helpful. The testing of sight words is necessarily diagnostic if it is complete, since the teacher checks each child on all sight words in a short oral test. The materials for learning the sight words constitute the only obstacle to individualizing this part of the work.

It is beyond the scope of this section to describe in detail the necessary materials for each subject. Sight words involving action or names of things can, of course, easily be taught on an individual basis by the use of cards with a picture on one side and the sight

word on the other or by labels on objects in the room.[2] Other words have to be taught through context; the child learns, for instance, a Mother Goose rhyme and selects the sight words in that rhyme from their position in it.

The phonics work may be learned individually by some such devices as those described by Miss Jessie MacKinder in her book *Individual Instruction in Infant Schools*, referred to elsewhere in this *Yearbook*. (See bibliography.)

Possibly the easiest subject of all is number work. The preparation of cards with a number of rubber-stamped pictures or dots on one side, and the corresponding digit on the other, can be used for children to teach themselves their numbers, once they have learned to count. A set of cards with an addition combination on one side of each and the answer to that combination on the back, can be used for a variety of games that can be played by children alone or in pairs. Through such devices the children can teach themselves their number facts. Each child can stick to any group of facts until he has them mastered. A full description of such games and devices is given in the *Teacher's Manual* for the *Washburne Individual Arithmetic* (World Book Company).

2. The Intermediate Grades

Spelling can easily be individualized, either according to the method described in the *Horn-Ashbaugh Speller* (J. B. Lippincott Company), or that described in the *Teachers' Manual of the Individual Speller* (World Book Company). The reason that spelling is so easily individualized is that the objective is already so perfectly definite—the ability to spell correctly a given list of words. The general principle of individualizing the study of these words consists first, of dictating them in a pre-test before the child has studied them—preferably dictating the list twice through, to avoid accidental correct spelling. Each child studies then only the words he has missed in the pre-test. The devices for dictating these missed words and checking the results are described more fully in the above-named books.

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[2] *Picture-Story Reading Lessons*, by Stuart A. Courtis, World Book Co., serve admirably for early work in individualization.

One objective of reading is the ability to read rapidly and with comprehension. The degree of speed and comprehension can readily be measured by various standardized silent reading tests. Speed and comprehension can usually be developed more readily by giving the child ample reading material that fits his reading ability than by any other means. The problem of individualizing reading then becomes largely one of determining a child's reading level and supplying him with ample material at that level along with some means of determining whether he has actually read the material supplied him.

The child's reading level can readily be determined by any good standardized silent reading test, such as the Stanford, Burgess, or Monroe.[3] By comparison with the published standards of such tests each child's score will show the grade level of his reading ability. He can then be given books to read silently which are suitable for children of his reading grade.

Where the school furnishes the textbooks, it costs no more to furnish as many *different* reading books as there are children in any given room than it does to furnish the same number of books all alike. Where children are paying for their own texts, it is possible to secure a book fee from every child, equivalent to what he would have to pay for a reader, and with these lumped fees to buy a room library containing books at various levels of difficulty, so that proper provision can be made for each child. Where a state series of readers is foisted upon a school, it is at least possible for teachers to interchange these readers among themselves, so that each teacher has readers of several different grades in her room, to which can be added a good variety of supplementary reading. Arrangement with public libraries can also usually be made whereby a variety of books from the public library can be kept on the teacher's book shelf.

Through one or more of these means it is possible in any school system to see that each child has a book which fits his particular level of reading ability. This book he can read silently, and be tested on it briefly when he has completed it. Such oral reading as is

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[3]*Stanford Silent Reading Tests,* World Book Co., Yonkers, New York. *Burgess Picture Scale,* Russell Sage Foundation, New York. *Monroe Silent Reading Test,* Public School Publishing Company, Bloomington, Illinois.

done can be done to the teacher alone rather than to the class as a whole—it takes no more time for a teacher to hear thirty or forty pupils reading to her alone, one at a time, than to hear each one read out loud to the class.

The books read can be tested in a variety of ways.[4] One very simple method is to correlate book reports with English composition by letting children write compositions on each book they read.

Under this plan of individual reading, each child can read from ten to fifteen books a year. When he has read the required number, he can be re-tested with a silent reading test and his next group of books can be chosen from the grade level indicated by the results of this test.

Such individualization of reading can be done immediately in any school without additional expense and without additional burden to the teacher. It results in highly increased reading efficiency.

3. The Junior High School

By the time a child has reached the junior high school it is possible to use regular published texts to better advantage than in the lower grades. It also happens that in both mathematics and grammar there are junior-high-school books written for individual instruction, as indicated earlier in this section. The technique for individualizing such subjects as mathematics and grammar is the general one described earlier—that of deciding definitely what degree of skill is needed, of preparing or selecting tests to determine whether or not this skill has been achieved, and of making assignments to the necessary text material for the achievement of this skill.

Shop work is individualized in many places. It is difficult to understand why it is not handled individually everywhere. If each child is making the thing in which he himself is interested and the teacher is helping where his help is needed, the work becomes individual without any special technique.

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[4]The methods used in Winnetka are described fully by Willard Beatty and Marion Carswell in the *First Yearbook of the Department of Principals* of the National Education Association.

4. The Senior High School

Mathematics, and especially algebra, are so definite in their very nature that the re-statement of the course in terms of definite objectives is rather easy. To determine which of these objectives are legitimate is, of course, quite another matter, but one which has to do with curriculum construction rather than individualization. Successful individualization of mathematics in the high school requires at present the preparation of material to supplement whatever text is being used. This will follow the general technique outlined in the first part of this chapter.

Laboratory work in the senior high school is often individualized. A very real saving in equipment and apparatus can be achieved in this way, for children's progress is spread out to such an extent that only a small number of children need to use any particular piece of apparatus at the same time. Consequently, instead of it being necessary to have enough pieces of apparatus for all members of the class, a much smaller number will suffice. If students are allowed to progress through their laboratory manuals at their own rates, this part of the work, with the accompanying notebooks, can be on an entirely individual basis. The class discussions accompanying it will have to keep pace with the slower members of the class or the members will have to be grouped for discussion purposes according to their various stages of advancement.

Shop work in the senior high school, like that in the junior high school, can be put on an individual basis without any special technique or preparation of materials.

To individualize Latin, it is necessary to prepare supplementary materials to go with the texts. These materials will follow the general technique of individualization: a determination of exactly what rules, vocabulary, and translation ability are to be required of the pupils; a breaking up of these larger objectives into smaller work units; a preparation of tests to cover each of these units; a preparation of assignment sheets to accompany the Latin text; and a preparation of answer sheets by which the pupil can check the accuracy of his own prose composition or translation.

In any subject requiring the preparation of special materials, such as Latin, mathematics, English, or social studies, whether it be in the grades or in the high school, it is desirable to make the

preparation at least one semester before attempting to individualize the work. Individual work prepared under the pressure of keeping ahead of the class is likely to be poor and to result in discouragement and frazzled nerves on the part of the teacher. A study like reading or spelling or shop, however, can be individualized without such previous preparation.

When the general plan of individualized work is inaugurated in any subject, supervised study and diagnostic tests will entirely replace the recitation in this subject. There will, consequently, be an immediate saving of time in the daily program. Much or all of this saved time should be used for socialized activities which may or may not be connected with the individualized subject. In the periods formerly used for recitations it is quite possible to introduce activities of an entirely different sort and for which the schools have not previously had time. Such activities may include dramatizations, discussions of current topics, self-governing assemblies, or various types of projects in which the pupils learn to co-operate one with another and in which they are given an opportunity for creative work and self-expression. To clear time for these group and creative activities is one of the main purposes of individual instruction.

Individual progress, with enough practice on each step to secure mastery, is probably the most efficient way to handle the common essentials. But individual education is much more than giving children these essential knowledges and skills. We must develop each child's special interests and abilities, and we must train him in their use for the welfare of all.

Variation is an essential law of evolution. No progress is possible without it. Every child should, therefore, be given opportunity to vary—to exercise originality, to create things, to express himself. But if his special abilities are to become a contribution to society, he must know how to fit them in with the contributions of others. He must have social training.

This social training will consist of living and working with others. Projects—group activities toward a desired end, each child doing his particular part in co-operation with his fellows—give just such training. Discussions, too, are needed—the impact of mind on mind, each child giving to all and receiving from all. And children

need daily practice in good citizenship, in working for the common weal.

Individual work in the common essentials makes room for these things. No individual is educated without them. For it is only through the self-expressive and socialized activities that schools can fully develop each individual child.

At every step of the way, when one is individualizing school work, it is necessary to keep the parents in sympathetic touch with what the schools are doing. Those teachers and administrators who have individualized the work of their schools have not, so far, met serious parental objections. Such objections as have come, have usually been the result of misunderstandings and have been rather easily straightened out. But objections are reduced to a minimum and support increased through parent-teacher meetings, publicity in the local newspapers, and talks before such local organizations as Rotary and Kiwanis Clubs, and women's clubs.

It is usually better to inform the parents of each step *after* the step is taken. It is easier for them to understand an accomplished fact than a proposed plan. When a particular subject has been put upon an individual basis, the method of handling that subject can rather easily be explained. It is not necessary to inform the parents concerning the whole plan beforehand, but it is well to keep them in close touch with the work that is being done.

As a matter of fact, however, the right presentation of the entire idea of individual instruction usually enlists pretty general support among parents. The chief objectors are school teachers and superintendents who have long been in the habit of thinking in terms of the old class unit. To parents it seems a perfectly natural thing to insist that each child master each step of his work, and to allow each child to progress as rapidly as his ability permits.

C. Summary

The general program, then, for individualizing the work in a school would consist of the following steps:

1. Select one or a few teachers who are likely to make the experiment a success. Secure their whole-hearted interest and cooperation.

2. Determine which subject or subjects are to be first individualized, selecting those which can be put on an individual basis easily.

3. Decide the exact amount of knowledge and skill to be mastered in the individualized subjects. State this in terms of goals of achievement.

4. Prepare or select complete diagnostic tests to cover all these goals of achievement.

5. Select textbooks prepared for individual instruction or prepare assignment sheets to accompany the ordinary type of textbook. These assignment sheets should contain definite directions to the child as to what parts of the text he is to study, supplementary practice exercises, and self-correction answer sheets for all exercises.

6. Prepare a simple record system to keep track of children's individual progress.

7. Permit each child to progress through his assignment sheets or individual instruction books at his own rate, testing him on each unit of work as soon as he completes it. Never allow him (unless he is subnormal in mentality or health) to proceed with one unit until he has mastered the preceding one.

8. Abandon all recitations in the individualized subjects, substituting supervised study and objective tests for the recitations.

9. Use the saved time each day for group and creative activities.

10. Keep the parents in close touch with the salient features as these become accomplished facts.

By following some such program, it is possible to adapt schools to the varying needs of the children.

SECTION VI

AN EFFORT AT APPRAISAL

By William H. Kilpatrick
Teachers College, Columbia University, New York City

The problem raised in this study is no simple one of devices. It cuts much deeper and in this depth lies its difficulty, because it involves in varying aspects one of the most fundamental of human problems—how to relate the individual to the larger group. Throughout history is to be seen the struggle to maintain freedom through law and institution. Without using institutional forms, the individual can neither co-operate effectively with his fellows nor derive adequate profit from the experience of his forebears. But nothing is better established than the repressing effect at times of institutions upon individual life and endeavor. An essential problem has thus ever been how to devise institutions that express without unduly repressing human life and aspiration.

So with our problem. Up to about a century ago, the children of our schools had only individual instruction, and in this absence of group effort and co-operative activity much was lost. The coming of class teaching was counted a great advance. For some purposes it was a great advance. It remains, we may confidently assert, a permanent contribution to educational procedure. But as we developed class procedure to its completer form and contrived textbooks and groupings and promotions to fit it, we began to find that not all was good. No one procedure would fit equally well all the children put into any one class. It was the old problem of institution and individual all over again. And, as always, the easiest solution was to hold to the institution and let the individual suffer. So we did. We held to our class procedure and let it drive out of school large numbers who did not fit. But latterly, two things have happened. First, by reason of law and otherwise, children increasingly cease to drop out of school. The misfits won't be so disposed of. Second, we have better measuring rods. We now know, where heretofore we guessed about, the inadequacy of our treatment. The situation is now shown in its ugly nakedness and is intolerable.

But this is not all. Our problem is even more complicated. Difficult as it is to adjust our institutions to individual differences, we have not yet seen the whole problem. We must ask about the theories of education involved. To advocate any specific program is in actuality to advocate all the consequences that attend the program, even though one be ignorant of what these attendant consequences may be. It is the special task of educational theory to find and exhibit such connections and with each proposed theory of education to join its legitimate tendencies. Whoever, then, advocates any specific procedure is in fact advocating the educational theory of which that procedure is the necessary part and parcel. Every school official whose decision determines what procedure shall obtain within his school system bases his decision—whether he knows it or not or cares or not—on some implied aim and essence of education. Any scientific student who tells the classroom teacher just what to do in teaching spelling is likewise assuming—possibly in equal ignorance—an aim and essence for education. Such an assumption is unavoidable in the face of actual procedure, for any actual procedure brings in its wake a whole train of educative effect. Not simply spelling is taught, but through a multitude of marginal stimulations and responses life in remote consequences is affected. When every advocated procedure entails inevitably each its train of characteristic life consequences, the obligation on us is imperative. We must for any proposed procedure examine the educational theory implicitly involved and as best we can forecast its train of probable attendant consequences.

Happily in the situation confronting us the examination need not be unduly long or systematic. The leading contributors have so well expressed themselves in the preceding pages that little or no comment there is needed, and especially so as this reviewer lacks in first-hand contacts. The effort is thus rather to single out a few more important assumptions and discuss their implications in the hope of presenting bases for valuation and judgment. To shorten the discussion, it seems wise to limit attention to the two most widely discussed plans, the Dalton and the Winnetka.

The essence of the Dalton plan seems to be an administrative device whereby individuals may, on an individual basis, acquire fixed quotas of subject matter within specified times. The Dalton notion

of the individual basis is very attractive, for every sensitive teacher has felt the difficulties due to individual differences.

For our purposes we may pass by the more obvious matters already sufficiently discussed in the preceding pages, and consider the attendant learnings that accompany the greater individual freedom, those concomitant by-products of the system, the learnings that come especially from the marginal stimulations and responses. Foremost among these is acquiring a better sense of responsibility. It is obvious that the Dalton plan gives wider scope for pupil responsibility, and we may be reasonably sure that here, as always, practice with success and satisfaction will bring its reward. If the plan works—and there seems much favorable testimony—we may confidently expect the pupils to gain in the responsibility exercised. To ask, as we must, how far this gain will extend itself to the exercise of responsibility in other fields is to bring up the whole knotty question of the transfer of training; but, as has often been pointed out, even a slight gain in a widely used trait is in effect a great gain. We can approve, then, this definite feature of the Dalton plan. Its possibilities are significant.

Another gain claimed is in the matter of time-budgeting. The same discussion will hold identically. The satisfactory exercise of this may be expected to show a gain which, even though small in other fields, is so often called into use as again to promise a valuable result.

A further attendant learning is in the line of social relationships. To allow this claim may occasion surprise to some, since a frequent —and probably just—criticism of the Dalton plan is its lack of group work. But the matter seems clear. There are actual social relationships which—as far as they go—are very good. These individual children accepting personal responsibility for their quotas of knowledge have the freedom which we adults constantly exercise of seeking help—and consolation—from fellows and at times from superiors. There is no small social effect in merely talking over accepted tasks. Such talk is far and away more social—and in like degree more educative—than our common class recitations where there is but little real communication and consequently but small incentive either to listen or to talk. In fact, joint endeavor is in the Dalton plan quite possible along some lines, nay almost certain if

only this be sought and the tasks (jobs, goals, assignments) be well devised.

A further important feature of these attendant learnings are the more wholesome attitudes that may very well result. A better self-respect is quite possible—may, indeed, be confidently expected in the degree that the other learnings are good. Much the same may be said of the changed attitude toward school, toward study, and perhaps most of all toward the teacher. With all such attendant learnings, as everywhere in life, nothing succeeds like success. If the children accept the tasks they face and feel that they are succeding with them, many favorable attendant learnings are almost sure to come.

These results claimed have an undoubted appeal. We need hardly be surprised at the wide acceptance of the Dalton plan, especially among those who do not question either the traditional curriculum or the usual conception that the proper aim of schooling is the examination-mastering of subject matter. England's acclaim of the Dalton plan is an illustration. That country had been stirred by the war to demand new things of, and in, education. Montessori's years in London just preceding had prepared the ground. Then came the Dalton plan as something new, requiring a minimum of theory adjustment and allowing a maximum of appeal to two deeply rooted British beliefs—first, in individual initiative, and second, in schoolroom education as a preparation for written examinations. Under these circumstances, the results are what might almost have been foretold.

But it is not easy to accept the Dalton plan as final. As a new broom, it will often sweep better at first than later. The element of competition among the pupils, strong at first, will often reach equilibrium on a less strenuous level. Moreover, not all the subjects will lend themselves equally well to the treatment. More conferences of pupils with teachers will prove necessary. Deviations forward and back from the plan will be tried. Group work must be provided. Individualized schooling was too seriously tried in the long centuries preceding Joseph Lancaster for us to believe that our educational salvation lies in any exclusive return thither. But we can be equally sure that our present lock-step can never be made satisfactory. Does the solution lie in saying that we need both individual and class

work? Perhaps so; nay, probably so but still more probable is it that no mere mechancial mixture of the two will suffice. The solution lies deeper. In the judgment of the present critic both individual education and group education, as hitherto taken, are alike fatally defective.

To intervene in a quarrel is always hazardous of old, and to say that both contestants are wrong seems madness itself. Yet this is the indictment here offered. The chief criticism of the Dalton plan is not found so much in its difference from the common plan as where they agree. Both sides have assumed that education properly consists in acquiring fixed-in-advance subject matter presumably to be used at some later time, typically in adult life. The Dalton plan is perhaps a little more open in the use of this conception and apparently a little more content to rely on it. Possibly we should thank its advocates for unwittingly bringing the issue more clearly into the open.

Why say that this common assumption is a defect? What is the bill of particulars? Has the education of the schoolroom no serviceable function? Shall the education of the child not prepare him for his future? Let it be answered at once and emphatically. The school is to be judged by the service it renders, renders to the child and to society; and any scheme of education which does not result in the young growing properly up into adult life is justly to be condemned. But neither of these considerations, nor both put together, justifies us in reducing the education of childhood to learning what merely the adult will need. The gap between childhood and adulthood is too great. To disregard this gap, to reduce education to mere preparation, this is the fatal defect seen alike in the Dalton plan and the common notion. To reduce education in this fashion is to sacrifice the intrinsic drives and the intrinsic thought connections which are essential if education is to perform its proper and necessary service.

If this be the fatal defect, if education must not be conceived essentially or even primarily as preparation for adulthood, how shall we conceive it? What is the opposed conception that is to be preferred?[1]

[1] Unfortunately, the space available suffices only for a condensed presentation of the case. The writer has discussed certain other phases of the matter in the *Journal of Educational Method* 2: 94-101, 230-236, 367-376; 4: 3-10. See also J. Dewey, *Democracy and Education*, pp. 49-65.

The opposing conception is that of the *continuous* remaking of the child life to ever higher and richer levels. This assumes first of all that the child as a behaving organism is *essentially* active, even in a true sense and in growing degree self-active, increasingly setting up the ends which it pursues. This assumes, second, that learning is intrinsically connected with the child's growing stream of activity; that subject matter is called for when the present stream is dammed for lack of a needed behavior-response—for instance, when the child must learn to balance himself in order to skate—and that subject matter thus serves by introducing the needed way-of-behaving not only to set the stream moving again (he now can skate), but as well to enrich life by what the new acquisition means in new possibilities skating parties, wider acquaintanceships, more sociability, better health, etc.).

This intrinsic learning to meet a present impinging situation of difficulty, be it noted in passing, is older in man than is man himself. It has, moreover, always been man's prime means of adjustment in his ever active struggle for existence. About it, thus functioning, man as a behaving organism has evolved, both mentally and socially. A factor and procedure so deeply rooted in the child's life and nervous structure cannot be ignored or lightly relegated to subordination. Rightly used, it will serve to bring a more adequate preparation for the child's future, but any attempt at preparation which rejects or ignores it will fail and must fail. To change nature, we must use nature. To ignore the bounds set by nature is to reject by so much the resources which nature offers. When we set the child to preparing for too distant a future by 'learning' things which are extrinsic to life as he now lives it, we are thereby ignoring the essence of the learning situation and we do so with loss. We must lose whenever we ignore the bounds set by nature.

But this is not all. This opposing conception of the *continuous remaking* of life assumes, third, that the learner's behavior in any experience is seldom or never simple or single; that, contrariwise, the stimulating situation is necessarily complex, the varied elements in it appealing to many different sensitivities in human nature to produce at least marginally a variety of simultaneous responses; and that, among these many marginal responses, those having to do with building attitudes are of especial importance upon character

and subsequent life. It follows, then, that no appraisal of learning outcomes can be based solely or even principally upon such single learning results as spelling or punctuation, however much the teacher or the school may elect to fasten exclusive attention for the time upon these. The attendant learnings are always present in fact in every single experience and will not be ignored in their future results. The total educational outcome must always be weighed in any effort to appraise a proposed procedure.

The essence, then, of the conception here opposed both to the Dalton plan and to the common notion is thus that education is properly conceived as the *continuous* remaking of the child's life to ever higher and richer levels. It demands that subject matter be conceived as ways-of-behaving, behaving here and now, be it said, actual ways of behaving, better tested too on Saturdays and on holidays than in the examination room. To test whether learning has taken place, it accordingly asks whether the child does in fact behave differently. Has the new way of behavior actually been incorporated into the child's life? And behavior here must be interpreted as widely as the very boundaries of child life. Nothing good is excluded from consideration. The child's progress is thus to be measured by his resulting life. Does he now *see* better what to do than formerly? *Will* he now choose more wisely and intelligently because of his better outlook and insight? *Can* he now better execute what he has more wisely chosen? *See, can, will*—these are our test words. In short, does the child's life grow progressively richer by reason of what he learns? If yes, then we are on the right line. If no, then something is wrong, no matter what formal tests the child can pass.

The essential error of the Dalton plan, then, is, as with all external examination schemes, that it accepts childhood as a time of storing up learnings to be used when called for at a remote day, typically in adult life. It is on this assumed theory that it sets up its series of learning stints reaching upwards from the fourth grade.[2] It assumes that a child can learn these successive stints and hold them stored up available for use when they shall later be called for. It further assumes that it does not hurt the child to be treated in this way.

[2]We may easily believe that its principal author had had too much sympathetic contact with the young child to be willing to reduce the education for the tenderer years to a series of stints.

Both assumptions are here denied,at least to a degree to condemn the practice. But few things, comparatively speaking, can be so learned long in advance of use to stay with one till the distant use shall come. And the hurt, positive and negative, to the ordinary child when so treated is probably very great. In most schools the attitude of opposition to school, books, intellectual matters, to all standards advocated by teachers of all kinds, is as a rule very great, greater than many good people seem to realize. Under the Dalton plan, the positive hurt here is, as was pointed out, somewhat lessened by the greater child participation—possibly in certain matters altogether removed. But the negative hurt, the loss of opportunities that a better régime would bring, is probably greater under the more mechanical setting of stints than under the classroom régime. For class discussions, if raised above mere testing, can be made very educative. In this, the Winnetka plan seems to offer much more than the Dalton. To Winnetka let us, then, turn our attention.

The Winnetka plan differs from the Dalton plan essentially in providing two types of learning. One, learning by goals, parallels the Dalton plan; the other, the socialized (class) work, has no counterpart in that plan. This feature would seem, in fact, well-nigh unique in American public education in that it sets no subject matter requirements (as these are commonly understood). To this attractive idea, we later return. The Winnetka scheme for learning by set goals is, by comparison, a refinement upon the Dalton plan, but differs also in not setting time limits. The meaning and bearing of these features have been well brought out in the preceding discussions. Here, however, credit should be given to Mr. Washburne (which he, in turn, courteously shares with Burk and Courtis) for his very commendable efforts to supply learning material in a form which approximately frees the child to teach himself. It is frankly admitted that, so far, not all subjects have yielded to this treatment. A like difficulty is noted also by the users of the Dalton plan. And the difficulty would seem to be fundamental, pointing perhaps to a fundamental criticism and suggestion later to be made of the general notion.

The term "the common essentials" is used at Winnetka to refer to the subject matter content assigned for learning by "goals." By this Mr. Washburne means "certain knowledges and skills . . . needed

by every child." That there are certain knowledges and skills which are needed by each child need not be disputed; but there are decided difficulties with the implications. First, it is implied that such an "essential" can be learned in isolation from its "natural setting" (to use Charters' term). This, it would seem certain, is only partially true. Second, it is implied that so large a body of such "essentials" can be definitely named. The more definitely this is tried, the further off does agreement seem to betake itself. Third, it is implied that "*the* common essentials" should consist exclusively of "knowledges" ("facts" were perhaps a better term) and skills. Surely this cannot be true. To leave out common honesty and truthfulness from any list of "common essentials" is at once to queer the list. Why are they omitted? Is it that they are not needed? Certainly not. The reason they are omitted is that they do not lend themselves to assignment by "goals." In other words, the phrase "the common essentials" carries with it just a shade of rationalization. The content is chosen on one basis; a name that implies a better basis is then given. Not "the common esentials," but "some common essentials that lend themselves to self-teaching assignment"—these constitute the content of the first part of the Winnetka scheme. The first and third of the implications named above call for further consideration. Let us begin with the third.

To dispute about terms can be the most fruitless of undertakings. But exception must be taken where a term so effectually 'begs the question' as to cover up an essential issue. This the term, "*the* common essentials," seems to do. So soon as we write it "some common essentials that lend themselves to self-teaching assignment," questions at once arise. What about the other "common essentials" that are not so taught? What are they? How important are they? Are we sufficiently providing for them? If we consider the matter, we seem led to conclude that desirable educational outcomes, the real common essentials, range themselves on a scale from those (a) that most readily lend themselves to specific assignment-under-penalty through (b) those that are partly so assignable up to (c) those that cannot be so assigned. We see at once that Winnetka undertakes to provide for the two ends of the scale by its two very different kinds of procedure. We also see that the subtle end of the scale—attitudes, ideals, appreciations—is no less essential

than the other end of the scale. Possibly if there is any difference, the more subtle are also more essential. We then wonder about the middle of the distribution scale. Is Winnetka sufficiently caring for it? More generally, can an out-and-out dualistic scheme adequately care for a continuous distribution? Does not the underlying theory of such a procedure need to be examined?

To return now to the first implication, that these "essentials" can be learned singly and in isolation from their "natural setting." Here again, our inquiry cuts deep. When is a thing learned? An answer satisfactory in the psychological laboratory is not necessarily satisfactory in life. Our words *see, will, can,* used above, will possibly carry the answer for life. Merely to be able to give back on the demand of another is not sufficient. The learner must himself recognize (*see*) the situation that calls for the response in question. Such recognition should (*will*) then—normally—be followed by the response; and this response should have been so perfected that it can effectually work (*can*). Does the learner *see* what to do? *Can* he do it? *Will* he do it? These three must all be present before the "essential" has been learned. The danger of teaching facts and skills in isolation is that one gets mainly the *can*; hardly, if at all, the *see*, the recognition of the proper situation; and hardly, if at all, the *will*, the tendency to act upon a perceived demand. Many considerations unite to make us believe all three must come together.

Does the preceding conclusion mean that there is no place for drill? Emphatically no. Drill is often essential, but how best to get it is not so easy to answer. We seem to have two factors involved—first, the perfection of a detailed movement; second, the junction of this detail in its appropriate hierarchy of habits. If we could disregard the latter (and all attendant learnings), efficiently 'motivated' drill might care for the former. Why not, then, first learn the separate detail and join later? The answer seems to be two-fold. First, 'separate' learning is not in fact separate. On the 'separate' basis, the cue to respond comes simply from some artificial or abnormal element in the situation, the word of the teacher or the place in the book or the like, and not from the normal situation. We are learning then to respond to the wrong cue and this must later be unlearned. If possible, the connections—cut and all—had better be made as we expect them to work. Second, the attempt to learn

'separately' is likely to lack felt pertinence to life as the learner sees life, especially if the learner be a child and what is to be learned concerns only adult life. Thus, lacking felt pertinence, it is likely to become distasteful. If this be pronounced, not only is the immediate (focal) learning effect lessened, but a host of unfavorable attendant (marginal) responses are likely to result. The subject of study, the school, the teacher, may become in greater or less degree objects of dislike. No one general answer to the problem of drill seems possible, but two tendencies are discernible. First that we should seek occasions for learning as far as feasible in "experiences of normal living" (to use Bobbitt's phrase). These experiences tend to place together for learning what must go together in life and thus promise a maximum of transfer to life. For a century, it seems clear, this tendency has been gathering momentum. The second growing tendency is that, where drill is needed beyond what is thus inherently supplied, we should seek to get it after the situation calling for it has been so met that the need for it can be seen and felt. This 'felt need' tends to change the learner's attitude so that good, and not bad, learning effects may be expected.

Before drawing the conclusion from these four paragraphs on learning by goals at Winnetka, one further thought may be helpful. Mention was made above of a "hierarchy of habits." The conception is most useful, but let us for the moment extend it beyond the habits most immediately involved in any specific movement so as to include all of the constituent responses of all kinds that enter into any deliberate act. Clearly, the laws of habit formation apply, *mutatis mutandis,* as truly to this whole aggregate as to the smaller hierarchy more commonly considered. Without going into argument, it is easy to see that by the interlinking of many such hierarchies is built that aggregate organization which we call the 'self.' Contending divisions within the self have been noted at least from Plato down, together with the evil effects of such disunion. The "war of the members," the "flesh lusting against the spirit," a "double life"—these age-old conceptions indicate in some measure the dangers—not to call in the more repellent discussions of some moderns. If all one's inner resources are so fitly joined together and organized—thoughts, emotions, ideals, attitudes, habits, skills, points of view, interests, appreciations, informations, in whatsoever terms we may

name them—that in any crisis all are available first to give one's 'best judgment' a chance to come into play and assume control and then, if need be, to have all one's 'powers of execution' act without hindrance—if these things can be, surely one is greatly advantaged. From such a unified organization, we may confidently expect, not only greater efficiency of practical behavior, but also greater happiness of inner harmony, and in it all better moral conduct. We may then say that a unified, rather than a divided, self is a proper end of endeavor, and in this we find accordingly another criterion by which to judge of educational procedure.

What does this criterion of the unified self tell us about education? How shall we as teachers help our children to build unified selves? Partly by seeking to enlarge the range of meanings on which they act, partly by having them act wholeheartedly as often as possible. These are stated positively. Negatively, let us keep our children from living double lives—part open, avowed and ostensible; part hidden, secret, forbidden. The moralists and teachers of the world have much to answer for in the way they have—in actual result—driven healthily active young people into double lives. We wish to scrutinize very, very closely any divisive scheme or plan of action which tends to break the child's life into two non-interacting parts. This is one practical reason for not opposing childhood and adulthood to each other as if they differed in kind when in blessed fact they differ only in degree. In this we have another wording for the indictment brought against education as mere preparation. When it is demanded that childhood spend its best endeavor working at anything which is not continuous with its own growing life, we force upon the child a double life. On the one hand, the unity of self-hood; on the other, the unity and continuity of life —these are two correlative ways of stating the ideal we here uphold.

And what now is the conclusion regarding Winnetka's plan of learning by goals? First and foremost, it tends to break the child's learning into two disconnected parts. One part, highly mechanical, belongs to the system of goals—a system too nearly complete in itself, too little connected with life. Stated psychologically, the danger is that the learning will not transfer. Stated in terms of life, the danger is a divided self—that the child will look on learning as

something apart from life, something to be 'learned' and then put behind him. If it be rejoined that the freer classwork at Winnetka counteracts this danger, the answer comes that the freer work does seem to be in far greater degree continuous with life, but the gap still remains between the individual drill work and the freer group work. The two parts of school do not connect. And unfortunately, in the whole discussion at Winnetka, learning by goals seems to be counted as the essential. The chosen term implies it, and it is only the time saved from the goal work that is available for the other. If further rejoinder be made that the children are happy, that they like not only the freer group work but quite as well to work for goals, then we have to say that present happiness, though a good, can never be taken by itself as final. The question of long run effect must decide. That the Winnetka plan of goals is a better way of doing many of the things the ordinary school tries less successfully to do, may well be admitted. But unless the danger of little transfer and the danger of the divided self can be better safeguarded, the present writer, for one, does not believe that learning by goals will continue to hold its present prominence at Winnetka.

When we turn to the other feature of the work at Winnetka, the situation is more defensible. It is a pleasure to commend the socialized work. Here there need be no divided self. Continuity with the rest of child life is possible. Here can be got the learning "through experiences of normal living" presented by Professor Bobbitt, with its emphasis upon "spontaneous, voluntary, and self-directed work." Could we make this the main part of school? And if so, what about the needed facts and skills? Mr. Courtis' answer seems to point the open way: "An ideal course of study would consist of two parts: (1) a series of social projects in which there would be need for the use of fundamental skills in meaningful situations, and (2) a series of self-instructive, self-appraising practice exercises so closely correlated with the project work that children could avail themselves of drill exercises as they became conscious of the need." [3] It is most interesting to see here represented both features of the Winnetka plan, with the emphasis reversed. In this, first things come first. Will it work? The present writer believes yes. Once we understand how few drilled facts and skills we really

[3] Quoted from Mr. Courtis elsewhere in this *Yearbook.*

need and how few of desirable outcomes can be got by separate drill, we shall find the task much easier. Collings' remarkable success with both skills and attitudes[4] shows at least what a rural school can do, once we apply both faith and effort. The various experiences described in this study increase one's faith. The second feature at Winnetka, with the first duly subordinated, holds much promise for the future.

And this seems the final conclusion. We must have both individualized work and group work. But we must revise the common notion of what constitutes the school's task. Education is not acquiring specified subject matter fixed in advance; it is the continuous remaking of life by acquiring subject matter as it is needed for present behavior. When we can see this and can understand the necessity for the unity of self-hood, then we shall see why drill, though necessary, must be subordinated to life—why the school, to be finally satisfactory, must be continuous with life.

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[4] Ellsworth Collings, *An Experiment with a Project Curriculum* (Macmillan, 1923).

SECTION VII

AN ANNOTATED BIBLIOGRAPHY ON ADAPTING SCHOOLS TO INDIVIDUAL DIFFERENCES [1]

Compiled by
L. Belle Voegelein

Reference Assistant, Bureau of Educational Research, Ohio State University, Columbus, Ohio

Since the essential purpose of this *Yearbook* is to show how schools have adapted their procedures to individual differences in pupils, the scope of the bibliography was planned with the same end in view. The existence of individual differences was taken for granted.

The bibliography is classified into four parts: Part I, individual instruction, with special sections on the Dalton plan, the Decroly method, and the Winnetka plan; Part II, classification, ability grouping, and promotion plans; Part III, supervised study; and Part IV, differentiated curricula and courses of study. The fact that schools are providing special classes for gifted and backward children, mental defectives, and the physically handicapped has not been considered.

The bibliography does not claim to be complete. Limitations of resources and time have prevented that accomplishment. In all parts but the first, it was expedient to cite standard bibliographies and then to supplement and bring these up to date. Attention is called to certain policies which have been followed. No specific entry appears more than once. If it contains material which classifies in several parts, it is placed in that part to which it first contributes. Where the entries have no annotations or the citations are incomplete, the compiler did not have access to the material but deemed it of too great importance to be omitted.

[1] Acknowledgments are due Dr. B. R. Buckingham, Director, Bureau of Educational Research, Ohio State University, for helpful guidance and advice and to members of the Committee and contributors of this *Yearbook* for suggested titles.

Part I. Individual Instruction, the Dalton Plan, the Decroly Method, and the Winnetka Plan

A. INDIVIDUAL INSTRUCTION

Alexander, Marie. "Individualized instruction in third-grade number." *Virginia Journal of Education.* 18:49-50. October, 1924.

The fundamental skills may be taught each child through activities or projects, so checked that each day's learning is definitely measured. The scheme is clearly explained.

Andrew, M. F. "The problem of individualizing instruction." *Education.* 26:129-136. November, 1905.

"Many of our best thinkers and teachers have been pleading for individual instruction, but the great mass of our profession is afraid of the plan. But it can and will be done in these United States."

Arnold, F. J. "Machinery for individual promotion and classification of pupils." *Kentucky High School Quarterly.* 9:1-54. July, 1923.

Reviews the most successful plans which have developed to break the lock-step shift. Is somewhat partial to the Winnetka individual instruction plan.

Baer, J. A. *Individual Differences Among Pupils.* Cleveland, Ohio, Cuyahoga County Board of Education, 1922. 28 pp.

Handbook for teachers in which there is set forth various methods of meeting the problem of individual differences.

Bagley, W. C. and Keith, J. A. H. "Adapting materials to individual capacities." (In their *Introduction to Teaching.* New York, The Macmillan Company, 1924. pp. 180-209.)

A summary of the methods which have been used and are being used. Concludes that much can be done to adapt teaching materials to the differences in the needs and capacities of pupils.

Bagley, W. C. "The Batavia system of class-individual instruction." (In his *Classroom Management.* New York, The Macmillan Company, 1907. pp. 214-224.)

States that this system is the most successful method yet devised of effecting a compromise between the individual and class methods. Statement made in 1907. The system is carefully explained.

Balch, G. D. "Individual work." *Journal of Rural Education.* 3:129-132. November, 1923.

Relates how the individual method of instruction was introduced and successfully conducted in a rural school in Connecticut.

BIGELOW, L. E. "Individual assignments in geography." *Elementary School Journal.* 9:250-256. January, 1909.

By assigning each pupil in her class the article best suited to his particular temperament and so of real interest to him, the teacher was able to secure gratifying results. References to materials used in the seventh grade for one year are included.

BOSTON. Special Class Teachers. *The Boston Way; Plans for the Development of the Individual Child.* Concord, N. H., The Rumford Press, 1917. 127 pp.

BOWLES, MAUDE. "A sixth-grade English project." *Detroit Journal of Education.* 3:30-33. September, 1922.

An experiment with pupils of low intelligence scores. The type of teaching used forced the pupils to take the initiative and rely upon themselves. The results were very satisfactory.

BOWMAN, E. C. "A plan for dealing with individual differences." *West Virginia School Journal.* 53:22-32. September, 1924.

Believes that by varied assignments a considerable measure of success may be attained by individuals of varying ability. The plan is explained in detail.

BOYER, P. A. *"The Adjustment of a School to Individual and Community Needs.* Philadelphia, University of Pennsylvania, 1920. 141 pp.

"Chapter VI deals more specifically with ways and means of adjusting the school to the needs of pupils, assuming no increase of funds or radical modification of the plans."

BROWN, S. W. "Some experiments in elementary-school organization." (in National Education Association. *Addresses and Proceedings, 1913.* pp. 458-463.)

Three problems demand solution: the problems of curriculum, classification, and instruction. The author discusses these briefly in the light of certain experiments he has carried on. He champions the rights and needs of each individual pupil.

BUCKINGHAM, B. R. "Individualizing instruction on the basis of testing, with special reference to arithmetic." *Proceedings of Second Annual Conference on Educational Research and Guidance.* Sacramento, Calif., California State Printing Office, 1923. pp. 16-32. (San Jose State Teachers College Bulletin.)

A very clear statement as to the procedure which should follow the giving of tests, if each individual child is to be benefited. Specific cases are analyzed and remedial measures indicated.

BURK, FREDERIC. "Breaking the lock step." *Journal of the National Education Association.* 13:123-124. April, 1924; also in *Progressive Education.* 1:8-10. April, 1924.

This résumé shows the benefits which follow the introduction of individual instruction into a system, the difficulties which beset its course, the consequent revolution of administrative mechanisms, and its constant adaptation to new conditions.

BURK, FREDERIC. "The desire to know, educational dynamo." *Normal Instructor and Primary Plans.* 34: 30, 95. December, 1924.

Probably the last article written for publication by that pioneer of individual instruction, the late Frederic Burk.

BURK, FREDERIC. "Education by dynamism." *Journal of the Association of Collegiate Alumnae.* Vol. 10. December, 1917.

Excellent presentation of a vital principle of education which when followed to its logical sequence would necessitate an individual system of education in both schools and colleges.

BURK, FREDERIC. *Every Child a Minor, vs. Lock-Step Schooling: A Suit in Equity.* Sacramento, Calif., State Printing Office, 1915. 72 pp. (San Francisco State Normal School. Monograph C.)

"Data of two years' experience in operation of a system of individual instruction showing accelerated rates of pupils' progress, elimination of wastes of school time, actual saving in cost of schooling and adaptability to various schools."

BURK, FREDERIC. "Individual instruction *vs.* the lock-step." *Sierra Educational News.* Vol. 13. July-August, 1917.

BURK, FREDERIC. "Individual instruction *vs.* the lock-step system." *Normal Instructor and Primary Plans.* 26:18, 69. January, 1917; 26:34, 68. February, 1917; 26:30, 71. March, 1917; 26: 32, 72-73. April, 1917. The last three of these articles are contained in *American City.* 18:327-330. April, 1918.

Describes individual schooling in operation in the Elementary Department of the State Normal School at San Francisco. Suggests how individual teaching may be introduced into rural and city schools. Maintains that the individual plan will be less expensive than the class plan.

BURK, FREDERIC. *A remedy for Lock-Step Schooling; A Preliminary Report upon the Weakness and Impossibilities of the Class System of Instruction, and Progress to Date in Substituting Therefor an Individual System of Teaching.* Sacramento, Calif., State Printing Office, 1913. 25 pp. (San Francisco State Normal School. Monograph A.)

Points out the inadequacy and evils of the class system of instruction and describes the method which the Elementary Department of the San Francisco State Normal School has substituted for this class lock-step.

BURK, FREDERIC and WASHBURNE, C. W. "The reorganization of normal school professional courses." *School and Society.* 8:382-385. September 28, 1918.

Most professional training has failed to produce desired results because there has been too much of abstraction and theory. What is needed are responsible teaching experience and a study of the whole conduct of individual children. Courses are suggested.

CALDWELL, O. W. "The laboratory method and high-school efficiency." *Popular Science Monthly.* 82:243-251. March, 1913.

Discusses some important experiments which have been made to determine the relative value of directed and individual classroom study.

CALDWELL, O. W. and COURTIS, S. A. *Then and Now in Education, 1845:1923.* Yonkers-on-Hudson, N. Y., World Book Company, 1924. pp. 124-126; 155-157.

"By far the most remarkable gain in the seventy-five years that have passed since 1845 is the growing tendency toward individualization of mass instruction."

CERTAIN, C. C. "The adjustment of the individual to the social group." *Detroit Journal of Education.* 3:458-459. June, 1923.

Lists fourteen personal and collective activities by which this adjustment may be attained.

CERTAIN, C. C. "Why individualization?" *The Detroit Journal of Education.* 3:282. February, 1923.

An editorial. Does not believe that the individualization of instruction is advantageous to individual children.

CHASE, S. E. "Provide for individual differences." *Journal of Education.* 99:464-465. April 24, 1924.

Lists the provisions made for individual differences in an elementary school of Hackensack, New Jersey.

COURTIS, S. A. "Education as purposing." *Detroit Journal of Education.* 2:3-6. February, 1922.

"The immediate problem before the teaching profession is to convert the aims and methods of education from the autocratic mass imposition of knowledge and skill, which prevailed in the past, to the democratic method of individual purposing in a social environment."

COURTIS, S. A. "Educational diagnosis." *Normal Instructor and Primary Plans*. 26:45-46. December, 1916.

Measurements are especially helpful to the teacher in studying individual children since they help her locate their difficulties and point out the necessary adjustments.

COURTIS, S. A. "Educational service stations." (In Thompson, F. V. *Schooling of the Immigrant*. New York, Harper and Brothers, 1920. pp. 239-261.)

COURTIS, S. A. "Making teaching efficient." *Normal Instructor and Primary Plans*. 26:53-54, 82. November, 1916.

Discusses the usefulness of measurements and illustrates his points in the teaching of arithmetic. Explains that the Courtis practice tests, if rightly handled, will provide for individual adjustment of work even in large classes. They will also reveal the child in need of assistance and the nature of the assistance needed.

COURTIS, S. A. "Measuring the child's capacity." *Normal Instructor and Primary Plans*. 26:31. October, 1916.

COURTIS, S. A. "Mental blindness." *Journal of Educational Research*. 10:399-401. December, 1924.

This spirited editorial points out that the sectioning of classes into homogeneous groups of pupils is only a step in the direction of ultimate individualization of instruction.

COURTIS, S. A. "Round table on limitation of training." *Second Annual Conference on Educational Measurements*." Bloomington, Ind., Extension Division of Indiana University, 1915. pp. 69-84. (Indiana University Bulletin. Vol. 13, No. 11. October, 1915.)

Standards should be set up in every grade for the amount of skill required in each subject. When the pupil has attained that standard, he should be given other work during the drill period. Carrying this plan to its ultimate completion would mean a reorganization of our schools. The future school is described.

COXE, W. W. and RICHARDS, E. B. *Suggestions for Teaching Silent Reading*. Albany, N. Y., The University of the State of New York Press, 1924. 35 pp. (University of the State of New York Bulletin, No. 803. May 1, 1924.)

Contains helpful advice on how to improve the reading habits of children of varying ability.

DECROLY, OVIDE. See Section C of this part of the bibliography.

DEFFENBAUGH, W. S. "Let the children advance according to individual ability." *School Life.* 10:97-98. January, 1925.

A brief survey of the movement for individual instruction. Its beginnings, progress and present trends are presented. It should be fostered as a means of breaking the lock-step in our schools.

DEIHL, J. D. "Individual differences and note-book work in modern foreign languages." *Modern Language Journal.* 1:52-59. November, 1916.

Reports an experiment in composition work in first- and second-year French and first-year German in the University of Wisconsin High School. Extra assignments were always available for the abler pupils.

DRAKE, E. H. "An interesting experiment." *Elementary School Journal.* 15:219-222. December, 1914.

The grade teachers of the Elkhart, Indiana, public schools, purposing to provide a system to meet the different abilities of different children, tried out the plan of minimal-maximal assignments of lessons. The experiment seems to justify the conclusion that the advantages of the scheme outweigh the disadvantages.

DUDLEY, LOUISE. "The quartile system: A method of varying classwork in accordance with the student's ability." *Educational Administration and Supervision.* 10:462-470. October, 1924.

This system has been successfully used in Stephens College. Its advantages are that it can be used in classes of any size and of any grade and that it distinguishes between good and poor students both in the work assigned and in the credit given.

EASTMAN, GRACE. "Finding and helping to overcome individual difficulties." *Kansas Teacher.* 18:7-8. March, 1924.

An account of how one teacher discovers and takes care of the difficulties of each of her pupils. Illustrations taken from an arithmetic class.

ERSKINE, LUCILE, "Individual instruction *versus* class teaching." *School Review.* 14:635-640. November, 1906.

In the McKinley High School, St. Louis, Missouri, every other day the class devotes itself to silent written work. This so-called "laboratory" day offers an opportunity for individual pupil help. Individual instruction is advocated for three reasons: every-day feasibility, pedagogic economy, and close correlation to the elective system.

EVANS, O. D. "Individual work as the ideal for the continuation school." *Tenth Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1923. pp. 274-276. (University of Pennsylvania Bulletin. Vol. 23, No. 38. June 9, 1923.)

Individual instruction may be provided in the continuation school by assignments suited to each individual pupil, by properly trained teachers, and by suitable teaching conditions.

FOSTER, H. H. "Individual instruction." (In his *Principles of Teaching in Secondary Education.* New York, Charles Scribner's Sons, 1921. pp. 309-319.)

A discussion of the general principles which should govern in individual instruction and some of the specific forms of such instruction.

FREELAND, G. E. "Methods of adjusting school work to individual needs." (In his *Modern Elementary School Practice.* New York, The Macmillan Company, 1919. pp. 341-367.)

Suggests the following methods: (1) the study of individuals, (2) individualizing recitations, (3) flexible assignments, (4) flexible classification and formation of special classes.

GOLDSTONE, G. A. "Differentiation of method in teaching reading to slow and bright pupils." *Bulletin of High Points.* 5:11-14. April, 1923.

The methods used are illustrated by definite examples.

HOFFMAN, U. J. *Organizing and Conducting a One-Teacher School.* Springfield, Ill., State Department of Public Instruction, 1923. 63 pp. (Circular No. 180.)

This monograph attempts to show that all necessary class instruction and all needed individual instruction can be given if a school is properly organized and conducted. Conditions must be "favorable for effective teaching by the teacher and effective study by the pupil."

HOLMES, HILDA. "The motivation of primary work." *Elementary School Journal.* 20:767-771. June, 1920.

An account of an experiment at the San Francisco State Normal School, in which each child had absolute free choice of work. The teachers set the stage for the motivation; the child supplied the motives.

HOLMES, W. H. "Plans of classification in the public schools." *Pedagogical Seminary.* 18:475-522. December, 1911.

Three plans of individual instruction, Pueblo, Batavia, and Newton, together with other prominent plans of grading and instruction, are described.

HOLMES, W. H. *School Organization and the Individual Child.* Worcester, Mass., The Davis Press, 1912. 408 pp.

The first part of the book presents the fundamental principles of the various plans of grading, classification, and instruction that have been worked out to adjust the schools better to the needs of individual pupils. The second part deals with the treatment of abnormal children in the public schools. A comprehensive bibliography is appended.

HORN, ERNEST. *Distribution of Opportunity for Participation Among the Various Pupils in Classroom Recitations.* New York, Teachers College, Columbia University, 1914. 40 pp. (Teachers College, Columbia University. Contributions to Education, No. 67.)

The purpose of this study is to supply data with regard to the nature of the practice in meeting the difficulty of reaching individual children.

HOWARTH, JANE. *A Study of Individual Variation in Language Ability in a Fifth Grade of Forty Children.* Thesis (M. A.) State University of Iowa.

Summarized in this *Yearbook* by Dr. Ernest Horn.

HUGHES, W. H. "Providing for individual differences with respect to instruction, scope of work, and credit." *Educational Administration and Supervision.* 5:343-356. October, 1919.

An account of the credit system which is used in the Riverview Union High School, Antioch, California. This method of weighted credit and credit for quality recognizes varying degrees of achievement and assigns credit in proportion to this achievement.

HUGHES, W. H. "Provisions for individual differences in high-school organization and administration." *Journal of Educational Research.* 5:62-71. January, 1922.

Data obtained from a questionnaire addressed to 425 high schools. It is evident that not sufficient attention is being paid to this problem.

Individual Child in the Schools, The. Mount Vernon, N. Y., Department of Public Instruction, 1922. 95 pp.

This annual report of the public schools of Mount Vernon, N. Y., centers about the procedure which has been adopted toward the individual child. It contains a number of definite reports on individual instruction.

"Individual instruction in the Eaton Rapids schools." *Moderator-Topics.* 44:396. February 28, 1924.

A brief account of the introduction of individual instruction in this Michigan city.

"Individual work." *Teachers World, London.*

For several years this weekly periodical has been devoting one or more pages to the methods to be used in this line of work.

IRWIN, E. A. AND MARKS, L. A. *Fitting the School to the Child; an Experiment in Public Education.* New York, The Macmillan Company, 1924. 339 pp.

The experiment was conducted in Public School 64, New York City. An effort was made to adapt educational experiences to individual needs by first finding out by accurate measurement, the mental and physical capacities of the children as they entered school. An account is given of the methods used in classification and analysis, and the types of treatment used with varying groups are discussed.

KENNEDY, JOHN. "The Batavia plan after fourteen years of trial." *Elementary School Teacher.* 12:449-459. June, 1912.

Since the plan has furnished one solution for the problem of individualizing instruction, has stood the test of time, and has been constantly applauded, its founder is still confident of its excellence.

KENNEDY, JOHN. *The Batavia System of Individual Instruction.* Syracuse, N. Y., C. W. Bardeen, 1914. 299 pp.

Discusses various aspects of the system and gives an account of the reason for its continuance. The book is a description and something of an argument in favor of this sort of organization.

KENNEDY, JOHN. "The need of individual instruction." (In National Education Association. *Addresses and Proceedings, 1901.* pp. 295-303.)

Individual instruction in the Batavia, N. Y., schools supplements the class recitation. This type of instruction is given by an extra teacher in the case of large classes and by the regular teacher in case of small.

KENNEDY, JOHN. "The uplift of individual instruction." *Ungraded.* 4:184-190. May, 1919.

LING, E. S. "Individualized instruction in Abington Township." *Eleventh Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1924. pp. 206-210. (University of Pennsylvania Bulletin. Vol. 24, No. 38. June 7, 1924.)

"Describes system in use in Abington Township and presents several case studies. Only provides individual work for 'those who need it most'."

MACKINDER, JESSIE. *Individual Work in Infants Schools.* London, Educational Publishing Company, 1923. 100 pp.

"Miss Mackinder has worked out an ingenious series of devices for pupil self-instruction in the primary grades. The book is very readable, highly suggestive, and probably the best contribution toward individualizing the primary grades that has yet been made."

McMANIS, J. T. "Individual differences in the early grades." *School and Society.* 3:289-295. February 26, 1916.

Since individual differences are more marked in pupils in the primary grades than in the upper, schools should adapt either the kindergarten idea or departmental work to the needs of these children.

MAGUIRE, M. T. "Each child in school must be taught as an individual." *Journal of Education.* 73:595-597. June 1, 1911.

MARK, H. T. *Individuality and the Moral Aim in American Education.* London, Longmans, Green and Company, 1901. 298 pp.

Contains a very good general discussion of American practices as the author found them at the time of his visit to the United States.

MAYBERRY, L. W. "Individualizing problems for pupils." *Elementary School Journal.* 18:133-137. October, 1917.

An experiment in which a system of checking-up the individual achievement of each pupil on facts presented for drill secured telling results. The method is explained and illustrated.

MORRIS, W. C. "The individual and our educational system." *School and Society.* 2:554-557. October 16, 1915.

A plea that the individual pupil may come into his full rights in our schools.

NEWCOMB, R. S. "Securing the maximum amount of work from every pupil." *Elementary School Journal.* 25:376-379. January, 1925.

Describes a six weeks' experiment in the Training School of the East Central State Teachers College at Ada, Oklahoma. The seventh- and eighth-grade arithmetic classes were given definite assignments in a regular text and optional assignments in a supplementary text in order to determine the amount of extra work which pupils would accomplish if opportunity were offered. Standard tests given before and after the experiment proved the value of this type of assignment for pupils of every range of ability.

NORVELLE, L. R. "Consideration of individual differences in class room instruction in beginning courses." *Quarterly Journal of Speech Education.* 8:53-60. February, 1922.

PARKER, S. C. "Adapting class instruction to differences in capacity." (In his *General Methods of Teaching in Elementary Schools.* Boston, Ginn and Company, 1919. pp. 269-325.)

Makes clear how class instruction may be adapted to individuals of different capacity by suggesting and giving examples of the proper school treatment of these types.

PARKER, S. C. "Adapting class instruction to differences in capacity." (In his *Methods of Teaching in High Schools*. Boston, Ginn and Company, 1922. pp. 362-390.)

Discusses the Pueblo plan, the sectioning of classes according to ability of pupil, the providing of special supplementary assignments for the fast pupils, and the Batavia plan. With this reference consult also the author's *Exercises*, pp. E190-197.

PARKER, S. C. "Adapting instruction to differences in capacity." *Elementary School Journal*. 25:20-30. September, 1924.

First interprets and describes with practical examples, seven types of differentiated teaching, then proceeds to discuss the history and theory of group instruction *versus* individual instruction. Concludes that, ideally, provision for both is necessary and that it should be proved by scientific studies and factual investigations.

PARKHURST, HELEN. See Section B of this part of the bibliography.

PARKINSON, W. D. "Individuality and social adjustment as means and ends in education." *Education*. 29:16-24, 104-112. September and October, 1908.

Approves of a combination of individual and class instruction and of a system of grading which is so flexible that readjustments may be made whenever logical.

PERKINS, E. V. "The individual pupil." *Journal of Education*. 83:234-235. March 2, 1916.

Urges that in all teaching the individual pupil should be the pivot about which instruction and management move.

PIERCE, B. L. "An experiment in individual instruction in history." *Historical Outlook*. 10:86-87. February, 1919.

The experiment was conducted in the University High School at Iowa City and the method used is concisely described. Results seem to justify individual instruction in preference to class.

PRATT, CAROLINE, ed. *Experimental Practice in the City and Country School*. New York, E. P. Dutton and Company, 1924. 302 pp.

A description of the practices and methods used in this experimental school. There are helpful suggestions for those who are interested in understanding child nature and in organizing schools to function more naturally.

RICHARDS, A. A. "The motivation of the professional course in the normal school." *School and Society*. 11:732-737. June 19, 1920.

Describes an experiment in which prospective teachers were stimulated with a permanent and productive interest in the individual differences of children and their proper treatment.

RICHARDS, A. A. "The psychology of superior children." *Pedagogical Seminary.* 31:209-246. September, 1924.

A study based chiefly on the progress rates of 175 children in the training department of the State Teachers College at San Francisco and on special case studies of 66 superior children of the same school.

RICHARDS, A. A. "Spelling and the individual system." *School and Society.* 10:647-650. November 29, 1919.

The plan was worked out in the San Francisco State Normal School and is possible in the ordinary schoolroom without any unusual mechanism. It entailed a grading of the children, the compilation of individual lists, and a method of individual instruction.

RINGER, EDITH. "An experiment in child-directed education." *Journal of Educational Method.* 2:186-193. January, 1923.

Details are given as to the system used in the Training School of the University of Southern California. In many ways it is similar to that of Dr. Burk. Miss Ringer was formerly a member of Burk's faculty.

ROSIER, JOSEPH. "The graded school; its strength and its weakness." *Review of Education,* 7:175-177. December, 1901.

While an ardent advocate of greater provision for individual growth and personal effort, the author believes that class instruction properly conducted will provide for it.

ROWLAND, S. V. "Individualized instruction in Radnor Township." *Eleventh Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1924. pp. 210-217. (University of Pennsylvania Bulletin. Vol. 24, No. 38. June 7, 1924.)

"'Devices permitting more individualized instruction are grouped under three heads: (1) grading and classification to permit more individual attention and more homogeneous grouping: (2) program provisions definitely made for individual instruction, and (3) provision in method for individual instruction.' 'In a regular graded school organization much individual work is being done, and teachers and principals are putting forth efforts to make it worth while from the standpoint of the child.'"

SAMUELS, A. A. *An About-Face in Education.* San Francisco, Harr Wagner Publishing Company, 1924. 260 pp.

An interesting experiment has been carried on for the past two years at the Cucamonga, California, State Demonstration School. The book describes the educational theory and practice upon which the school is based. All activity centers about the individual child and his needs.

SANFORD, M. B. "Maximum and minimum lesson assignments." *English Leaflet.* 22:9-12. December, 1923.

The author has found this scheme to work very satisfactorily in her English classes in the Holyoke, Massachusetts, High School. Each pupil does his best.

SCHLOCKOW, OSWALD. "Individual *versus* class instruction." *New York Teachers' Monographs.* 3:1-6. December, 1900.

While the author argues in favor of the superiority of class instruction, he believes that a combination of both systems has advantages.

"A school program framed in terms of children's needs." *Lincoln, Nebr., School Bulletin.* 4:1, 2, 3. February 25, 1924.

The article consists of concise statements as to the former and present practices of dealing with individual differences.

SCHORLING, RALEIGH. "The problem of individual differences in the teaching of secondary-school mathematics." *School Review.* 23:535-549, 649-664. October and December, 1915.

A study based on the results of a questionnaire sent to institutions offering practice-teaching courses. The article presents a list of current practices as revealed by the responses, studies the validity of these practices, and discusses in detail the proper technique involved in dealing with the slow and fast student.

SEARCH, P. W. *An Ideal School.* New York, D. Appleton and Company, 1901. 357 pp.

One of the best discussions of the Pueblo plan which is the exponent of an almost pure type of individual instruction.

SEARCH, P. W. "Individual teaching: the Pueblo plan." *Educational Review.* 7:154-170. February, 1894.

A detailed description of the principles, methods, and results of the work in the Pueblo industrial public schools of Pueblo, Colorado. The fundamental characteristic of the plan is its conservation of the individual.

SEARCH, P. W. "Individualism in mass education." (In National Education Association. *Addresses and Proceedings, 1895.* pp. 398-411.)

Points out the defects of the graded school system and the superiority of the school of individualism. A general discussion of the paper follows.

SEARCH, P. W. "The Pueblo plan of individual teaching." *Educational Review.* 8:84-85. June, 1894.

Supplements the author's article of February, 1894.

SHAW, L. A. "An experiment in the supervision of handwriting." *Detroit Journal of Education.* 2:57-59. February, 1922.

The outcomes of the experiment were that supervision pays and that it is most effective when directed to those in special need of assistance.

SIDERS, W. R. "In class instruction, how can the individual be reached?" (In National Education Association. *Addresses and Proceedings, 1909*. pp. 175-182.)

Advocates a judicious use of whole-class, group and individual instruction, the plan in use in the Pocatello, Idaho, schools. Reviews several other plans.

SMITH, J. H. "Individual variations in arithmetic." *Elementary School Journal*. 17:195-200. November, 1916.

A study of three types of drill work which showed that the type which supplemented class drill by individual help at the points of weakness as diagnosed by tests, proved the most efficient.

SMITH, M. H. "Finding the individual." (In National Education Association. Department of Elementary School Principals. *First Yearbook, 1922*. pp. 64-69.)

A very careful and comprehensive description of the Sutherland method of individual education as worked out and used in the Los Angeles city schools.

SMITH, N. B. "Experiment to determine the effectiveness of practice test flash cards in primary arithmetic." *Detroit Journal of Education*. 3:377-379. April, 1923.

Describes an experiment whose basic aims were to provide each pupil with a double motive for participating in the drill, to teach him the procedure necessary for working independently, and to allow individual progression and simultaneous participation in drill.

SMITH, N. B. "Experiment to determine the effectiveness of the Detroit standard practice tests in reading." *Detroit Journal of Education*. 2:48-52. June, 1922.

Proves that the purposeful self-teaching method of reading is more effective than the traditional system. Each child progressed according to his individual ability and purpose, kept his individual record of advancement and appraised his own results.

SNYDER, MORTON. "The individual pupil as the unit of supervision in high schools." *School Review*. 28:205-219. March, 1920.

Big business ideas have dominated our schools too long; attention must again be concentrated on the individual pupil. Schools must be so administered that each pupil may become his best. Helpful measures are suggested.

SPAULDING, F. E. "Unassigned teacher in the schools." *School Review*. 15:201-216. March, 1907.

Describes the position of the unassigned teacher and the meaning and significance of her work as practiced in the Newton, Massachusetts, schools.

STARCH, DANIEL. "Variation in human capacities." (In his *Educational Psychology*. New York, The Macmillan Company, 1919. pp. 26-48.)

Shows clearly their extent and nature, how they may be measured and represented, and how schools have made provision for them.

STODDARD, A. J. "Pupil progress by the individual method." (In National Education Association. *Addresses and Proceedings, 1923*. p. 996.)

Very interesting results are being secured in those schools which are attempting to develop each child to the limit of his native ability, by means of instructing him as an individual.

STORMZAND, M. J. "The trend toward individual instruction in the public schools." (In his *Progressive Methods of Teaching*. Boston, Houghton Mifflin Company, 1924. pp. 351-363.)

Points out that much of the individual instruction trend is an incidental by-product of movements whose aims were to meet other needs.

STRUTHERS, A. B. "Some adjustments to varying needs of pupils in junior-high-school administration." (In California High School Teachers' Association. Committee of Fifteen. *Report on Secondary Education in California, 1923*. San Francisco, The Association, 1924. pp. 128-176.)

"Presents simple, concrete material and examples of how solutions have been attempted" in the McKinley Junior High School, Los Angeles.

SUTHERLAND, A. H. "Correcting school disabilities in reading." *Elementary School Journal*. 23:37-42. September, 1922.

In the Los Angeles adjustment rooms, backward children were taught reading by differentiating it into thirteen types and by placing each child in the appropriate type. Practice exercises and tests were used to facilitate the acquiring of correct reading attitudes, a record of which was kept by the child on an adjustment progress card. The experiment is now being tried in regular classes.

SUTHERLAND, A. H. *Handbook for Teachers of Adjustment Rooms*. Los Angeles, Calif., Department of Psychology and Educational Research, Los Angeles City Schools, 1922. 47 pp.

Although this booklet is devised for the use of teachers of dull, normal, and superbright children to enable them to catch up with their mental peers, the question is pertinently raised whether the same methods of specifically directed education might not well be adopted as the regular school procedure.

SUTHERLAND, A. H. "Methods of individual instruction in the adjustment rooms of Los Angeles." (In Terman, L. M. and others. *Intelligence Tests and School Reorganization.* Yonkers-on-Hudson, N. Y., World Book Company, 1923. pp. 53-72.)

The curriculum is studied from the standpoint of the individual child, with special application to the adjustment rooms of Los Angeles.

SWIFT, E. J. *Mind in the Making.* New York, Charles Scribner's Sons, 1908. pp. 253-255.

Other experiments with the Pueblo plan have brought favorable results.

THEISEN, W. W. "Provisions for individual differences in the teaching of reading." *Journal of Educational Research.* 2:560-571. September, 1920.

A discussion of a study based on letters from some of the best teachers of reading. Tables I and V suggest a variety of measures for meeting individual differences.

UHL, W. L. "Use of standardized materials in arithmetic for diagnosing pupil's methods of work." *Elementary School Journal.* 18:215-218. November, 1917.

Through the use of such materials teachers are enabled to deal directly with the precise form of the mechanics of arithmetic of which the individual child has need.

WASHBURNE, C. W. "Breaking the lock-step in our schools." *School and Society.* 8:391-402. October 5, 1918.

Treats of the meaning of, and need for, individual instruction, the plans that have been tried, and the administrative problems which have to be met.

WASHBURNE, C. W. See Section D of this part of the bibliography.

WETZEL, W. A. "The old and the new systems of education: a contrast." *Education.* 33:503-512. April, 1913.

Pleads for more individual instruction and courses of study so organized and taught that the school of the city boy may assume the functions of the school, the home, and the neighborhood of the country boy.

"What the Batavia system is." *Journal of Education.* 99:50. January 10, 1924.

John Kennedy is quoted as saying that the Batavia system is not a method of individual instruction, but a remedial agency.

WILLING, M. H. "The encouragement of individual instruction by means of standardized tests." *Journal of Educational Research.* 1:193-198. March, 1920.

Standardized tests are helpful in encouraging individual instruction by furnishing evidence of the presence and extent of individual differences, by defining the exact nature of the differences, and by permitting the establishment of standards for individual accomplishment.

YOUNG, J. W. A. "The individual mode." (In his *The Teaching of Mathematics in the Elementary and Secondary School.* New York, Longmans, Green and Company, 1907. pp. 81-86.)

Offers a mode for meeting individual differences. The discussions and experiments are worthy of study.

ZIRBES, LAURA. "Diagnostic measurement as a basis for procedure." *Elementary School Journal.* 18:505-522. March, 1918.

A report of an experiment to improve reading by individual instruction. The procedure was initiated by the use of standard tests and scales, followed by individual remedial lessons. Graphic records of actual measurements of improvement are included.

B. THE DALTON PLAN

BASSETT, ROSA. *Dalton Plan Assignments.* London, G. Bell and Sons, 1922. 2 Vols.

"The first volume deals with English, geography, and history, the second volume with mathematics and science. In both volumes a complete syllabus is given with assignments and tests."

BELL, G. F. "The Dalton method." *The School, Toronto.* 12:40-42. September, 1923.

Describes an experiment with the Dalton plan in the lower forms at Upper Canada College. Typical assignments are included.

COLE, P. R. "An elementary school on the Dalton plan." *Schooling, Sydney, N. S. W.* 6:170-176. August, 1923.

A description of the Dalton plan in operation at West Green School, Tottenham, in the north of London. Detailed assignment in geography is included.

COOK, E. J. "The Dalton plan for younger children." *Teachers World, London.* 32:12, 134, 226, 346, 440, 557, 636. October 1, 15, 29; November 12, 26; December 10, 24, 1924.

A series of articles showing how the author adapted the Dalton plan to children below the fourth grade. Her recommendations are based on experiments conducted in her own school.

COOK, E. J. "The sub-Dalton plan." *Times (London) Educational Supplement.* No. 447, p. 499. November 10, 1923.

An account of the working of the Dalton plan as applied to younger children than the plan usually includes. The experiment was tried out in the St. Martin's Girls' School, Dover, England.

CORSON, H. K. "The Dalton plan." *Popular Educator.* 41:430-431. April, 1924.

The way the plan operates in the Dalton, Massachusetts, High School.

CUMBERBIRCH, C. T. "The Dalton plan." *Journal of Education and School World, London.* 54:709-711. November, 1922.

Asserts that the Dalton plan was introduced into England at the psychological moment, *i. e.*, when the teachers were weary of the weaknesses of class teaching and were seeking some remedy. Gives a detailed account of how the city of Hull adapted the new plan to meet its own needs.

"The Dalton plan in primary schools."*Times (London) Educational Supplement.* No. 465, p. 116. March 15, 1924.

Brief report of the addresses given in connection with the Conference on the Dalton plan in the elementary school.

DEAN, N. G. "The teaching of English under the Dalton plan." *New Era.* 4:159-164. April, 1923.

As English is taught in the Leeds Kirkstall Road School, with specimen assignments.

DEWEY, EVELYN. *The Dalton Laboratory Plan.* New York, E. P. Dutton and Company, 1922. 173 pp.

This plan attempts to provide proper instruction for each individual pupil, beginning with the fourth grade and extending through the high school. The author describes in great detail the experiment as tried in the high school at Dalton, Massachusetts, in the Streatham County Secondary School, England, and in the Children's University School, New York City.

DIELS, P. A. "Dutch view of the Dalton plan." *School Life.* 9:198. May, 1924.

A Dutch delegation sent to England to study the practical working of the Dalton schools, make a report favoring the introduction of the plan in Holland.

DOUGLAS, LUCILE. "Teaching English on the Dalton plan." *English Journal.* 13:335-340. May, 1924.

Explains how English literature and composition may be taught successfully by this method. Considerable attention is paid to the plan itself.

EADES, JOHN. "The Dalton plan." *New Era.* 4:222-224. October, 1923.

An explanation of the Dalton plan, stating its fundamental principles, how it is administered, and its advantages.

EADES, JOHN. "The Leeds Dalton plan." *Progressive Education.* 1:21-23. April, 1924.

An account of how the Dalton plan has been adjusted to an English elementary school.

FROST, STANLEY. "A school where they hate to quit." *Collier's.* 71:5-6. February 3, 1923.

A popular type of article on the Dalton plan as it is carried out in the Dalton, Massachusetts, High School.

HARVEY, M. G. "The Dalton laboratory plan in English literature." *The School, Toronto.* 12:104-108. October, 1923.

An experiment in teaching English literature, with a three weeks' assignment on Cowper's poems included, showing variations for pupils of different abilities. Although it was first planned to have one conference or lecture lesson to every three laboratory periods, more meetings were found advisable, since reading aloud assisted in interpretation.

JACKMAN, ERNEST. "The Dalton high school." *Progressive Education.* 1:19-20. April, 1924.

Answers four questions as to whether certain assumed essentials are acquired along with the advantages of this mode of administration. The Dalton High School is the touchstone.

JACKMAN, ERNEST. "The Dalton plan." *School Review.* 28:688-696. November, 1920.

The distinctive features which characterize the Dalton plan as it operates in the Dalton, Massachusetts, High School are: (1) monthly assignments, (2) freedom of study, (3) freedom of progress, (4) individual instruction, and (5) group creativeness. The article describes each of these features.

KIMMINS, C. W. "The Dalton plan." *Journal of Education and School World, London.* 55:91-93. February, 1923.

A clear and concise statement of the claims made for the Dalton plan. Emphasis is placed on (1) the working of the plan, (2) the position of the teacher under this plan, (3) subnormal and supernormal children, and (4) the advantages of the plan.

LIMA, AGNES DE. "The Dalton plan." *New Republic.* 37:308-309. February 13, 1924.

The distinctive features of the plan are explained for the general reader. States that the plan has been adopted in many countries.

LYNCH, A. J. "Arithmetic under the Dalton plan." *New Era.* 4:189-192. July, 1923.

Description of an actual experiment.

LYNCH, A. J. *Individual Work and the Dalton Plan.* London, George Philip and Son, 1924. 264 pp.

"Gives a complete description of the working of the Dalton plan of individual work in a primary school."

MARSHALL, F. M. "The Dalton plan at Manhattan trade school for girls." *Journal of Education.* 99:608-609. May 29, 1924.

The introduction of the Dalton plan into the trade school has met with the approval of the principal, the teachers, and the girls. Points out what adjustments were necessary and their effect on the students.

MASSON, T. L. "Teaching children to teach themselves." *World's Work.* 44:410-414. August, 1922.

An informal exposition of the Dalton laboratory plan.

O'SHEA, M. V. "Educational pioneering." *Saturday Evening Post.* 195:69. January 20, 1923.

Predicts that the Dalton laboratory plan will be thoroughly tried out and, if it stands the tests, will be adopted in so far as it is found practicable.

"Over-age pupils at Waring try the Dalton plan." *School Topics.* 6:1,4. November 15, 1923.

In the Waring School of Cleveland, Ohio, the Dalton plan is being employed in over-age classes. Four subjects only are taught. Each pupil keeps his own graph to show his accomplishments. A laboratory period of unsupervised study is followed by recitation periods. Tests in all subjects are given weekly.

PARKHURST, HELEN. "The children's university school." *School and Home.* 7:17-24. January, 1924.

Explains how work is accomplished in the school where the Dalton plan originated. It is a new way of school living.

PARKHURST, HELEN. "The Dalton laboratory plan." *Journal of Education and School World, London.* 53:694-696. November, 1921.

This article discusses the plan under the following captions: the principles of the plan; the plan itself; organization of the work; the timetable; interaction of groups; and the assignment.

PARKHURST, HELEN. "The Dalton laboratory plan." *Progressive Education.* 1:14-18. April, 1924.

A clear and interesting presentation of this plan.

PARKHURST, HELEN. "The Dalton laboratory plan." *Journal of Education and School World, London.* 53:694-696. November, 1921.

The Dalton plan demands that the instructors shall outline the work of the year (the curriculum of projects), so that each pupil may know and understand the scope and nature of the work that he is expected to accomplish.

PARKHURST, HELEN. "The Dalton plan." *Times (London) Educational Supplement.* 11:297-298, 315-316, 321-322, 333-334, 347, 357-358. July 2, 9, 16, 23, 30, and August 6, 1921.

A series of six articles in which the Dalton laboratory plan is described. A brief history of this scheme is included.

PARKHURST, HELEN. *Education on the Dalton Plan.* New York, E. P. Dutton and Company, 1922. 278 pp.

The plan is explained with careful detail by its founder. She includes a concrete example of the plan in practice and sample assignments, together with a graph method of recording progress. The best account of the subject which has yet appeared.

PROUTY, C. E. "The Dalton laboratory plan." *Boston Teachers News Letter.* 12:24-26. January, 1924; 12:12-16, 25, 27, 29. March, 1924.

A description of the main features of the Dalton plan, followed by an account of how it was adapted to an eighth-grade class in English in the Samuel Adams School, Boston.

PROUTY, C. E. "An experiment in the use of the Dalton laboratory plan." *Elementary School Journal.* 24:599-607, 679-691. April and May, 1924.

This article is quite similar to the preceding one.

RADCLIFFE, J. A. "Classroom organization; the Dalton plan and competition." *Educational Times, London.* n. s. 5:192-193. May, 1923.

An organization which divides a class both horizontally and vertically in order to stimulate competition while taking care of the individual.

RIBLET, M. V. "A modified Dalton plan." *Bulletin of the New York Society for the Experimental Study of Education.* 6:1-2. December, 1924.

In the Bryant High School of New York City, the Dalton plan was modified for use with the lowest third in 9A. Results have justified the procedure.

ROSE, KATE. "The Dalton plan." *Teachers World, London.* 28:431, 439. November 22, 1922.

Describes how the plan was successfully operated in a school which had no special subject rooms, specialist teachers, or large supplies of books.

STENT, E. C. "Schoolcraft." *Education Outlook, London.* 76:147-148. April, 1924.

An interesting description of how French may be taught according to the Dalton plan.

STOKES, R. M. "The pursuit of knowledge under the Dalton plan." *Emerson Quarterly.* 4:17-18. March, 1924.

A description of this plan by an instructor in English in the Dalton, Massachusetts, High School.

TAYLOR, J. S. "An experiment with the Dalton plan." *Bulletin of High Points.* 6:24-28. October, 1924.

This interesting experiment was conducted by the English Department of the Girls Commercial High School in Brooklyn. Shows how one subject may be 'near-Daltonized' while the rest of the courses go on in regular fashion.

UNDERHILL, R. I. "The Scarsdale application of the Dalton plan of individual instruction." *School Review.* 33:48-56. January, 1925.

An excellent description of the way the Dalton plan was introduced into the schools of Scarsdale, New York, and of what modifications were necessary to meet the problems which arose. The ensuing beneficial results commend the plan.

WASHBURNE, C. W. *Progressive Tendencies in European Education.* Washington, Government Printing Office, 1923. pp. 13-19. (U. S. Bureau of Education. Bulletin, 1923, No. 37.)

Describes the Dalton plan, the Bedales plan, and the Mackinder methods of individual instruction.

WOLSTENCROFT, H. P. "The Dalton plan; a record of a year's experience in an English school. *Educational Times, London.* n. s. 3:461-462. October, 1921.

"Says that the plan has the advantage of being applicable to any curriculum and that it has resulted in better work, greater progress, increased interest, fuller scope, and the growth of self-reliance and a feeling of responsibility among the pupils."

C. THE DECROLY METHOD [2]

DALHEM, LOUIS. *Contribution de l'Introduction de la Methode Decroly a l'Ecole Primaire.* Brussels, Belgium, Maurice Lamertin.

DECROLY, OVIDE AND MONCHAMP, MLLE. *L'Initiation à l'Activité par les Jeux Educatifs.* Neuchatel, Switzerland, Delachaux and Niestle, 1922. 152 pp.

DECROLY, OVIDE. "Methods of individual instruction and educational games." *Progressive Education.* 1:24-28. April, 1924.

Several types of individual instruction are discussed, followed by a more elaborate account of the kinds of educational games which have been used "to supply each child with material that will interest him, and instruct him, cause him to concentrate his attention, to reason, and to act by utilizing his play impulse."

DECROLY, OVIDE AND BOON, G. *Vers l'Ecole Renovee.* Brussels, Belgium, Office de Publicite.

DESCHAMP, JEANNE. *L'Auto-Education a l'Ecole.* Brussels, Belgium, Maurice Lamertin. (In preparation.)

HAMAIDE, AMELIE. "The Decroly method." *Progressive Education.* 1:29-32. April, 1924.

Presents the formulae of educational truth which led Dr. Decroly to inaugurate a method of individual instruction. This method is described distinctly and intelligibly by his collaborator.

HAMAIDE, AMELIE. *La Méthode Decroly.* Neuchatel, Switzerland, Delachaux and Niestle, 1922. 208 pp.

"Outlines the history of Decroly's work, and discuss the principles underlying his scheme for a more effective type of education in the elementary schools."

This book has been translated into English by J. L. Hunt. It is published by E. P. Dutton and Company of New York under the title *The Decroly Class.* It contains 318 pages.

HUNT, J. L. "Individual progress in the Decroly school." *Progressive Education.* 1:33-34. April, 1924.

"The more important provisions for individual progress concern the enrichment of individual experience under the conditions offered by a flexible curriculum, a socialized environment, and a program of subject matter based on fundamental interests of childhood."

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[2] Certain citations in this section are regrettably incomplete since adequate bibliographical sources were not available to the compiler.

WASHBURNE, C. W. *Progressive Tendencies in European Education.* Washington, Government Printing Office, 1923. pp. 19-20. (U. S. Bureau of Education. Bulletin, 1923, No. 37.)

Decroly's method may be described as a whole class group working together coöperatively. Pupil lectures and reports constitute an important feature.

D. THE WINNETKA PLAN

ALSHOUSE, H. S. "Individualization of instruction." *Eighth Annual Schoolmen's Week Proceedings.* Philadelphia, Press of the University of Pennsylvania, 1921. pp. 235-237. (University of Pennsylvania Bulletin. Vol. 21, No. 37. June 18, 1921.)

A detailed report of a successful experiment in adapting the Winnetka system of individual instruction to the teaching of arithmetic in Grades IV-VIII of the Williamsburg, Pennsylvania, schools.

BEATTY, W. W. "Individual instruction in the Winnetka Public Schools." *Eleventh Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania. 1924. pp. 194-200. (University of Pennsylvania Bulletin. Vol. 24, No. 38. June 7, 1924.)

"Describes the Winnetka technique in clear, conversational language. Points out the fact that social discussions and group activities occupy an important place in the Winnetka plan. States that old grade promotion must go, content of courses is going to be more accurately defined, thoroughness of children's work is going to be more objectively measured, and an entirely new race of textbooks is going to be developed. 'These things we believe are coming as inevitably as tomorrow's dawn.'"

CARSWELL, MARION and BEATTY W. W. "Reading and language in the Winnetka public schools." (In National Education Association. Department of Elementary School Principals. *Second Yearbook.* pp. 313-329. Bulletin, Vol. 2, No. 4. July, 1923.)

A description of the individual system of teaching reading and language.

GARVER, F. M. "The values and the limitations of individualized instruction." *Eleventh Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1924. pp. 200-206. (University of Pennsylvania Bulletin. Vol. 24, No. 38. June 7, 1924.)

"A critical analysis of the Winnetka plan, pointing out both its dangers and its value. 'The fact that the Winnetka plan has been in operation in a public school system for a number of years and that the school

officials, teachers, and citizens are well satisfied that it works effectively is of tremendous significance for public education.' 'Its two chief defects, first, that of not allowing for sufficient individual motivation in the acquisition of the essential skills in the so-called tool subjects, and second, of not being efficiently applicable to the study of the social subjects, should be corrected.' "

HORN, J. L. "The individual system." (In his *The American Elementary School.* New York, The Century Company, 1923. p. 254.)

A very brief description of the systems in operation in the San Francisco State Teachers College and in the city schools of Winnetka, Illinois.

MOHR, LOUISE AND WASHBURNE, C. W. "The Winnetka social-science investigation." *Elementary School Journal.* 23:267-275; 489-491; 646-647. December, 1922, May and March, 1923.

The social-science teachers of the school formed a seminar group to find out by statistical study just what items in history and geography should be known. The courses of study and tests, based on this research, are scientifically fitted to the children who use them. Dr. W. S. Monroe asks: "What are scientific methods?" The authors reply.

PENDLETON, CHARLES AND WASHBURNE, C. W. "The fact basis of a history, geography, and civics curriculum." *Journal of Educational Research.* 8:233-238. October, 1923.

A brief article on the method used by the Winnetka research group to determine what essential facts should be taught in history, geography, and civics.

REESE, M. M. "The study of mathematics under the individual system." *Mathematics Teacher.* 15:460-466. December, 1922.

An account of what is studied in each grade, together with the method of individual work. For coöperative work. the pupils carry on the business of the Skokie Finance Corporation.

VOGEL, MABEL, JAYCOX, EMMA, and WASHBURNE, C. W. "A basic list of phonics for Grades I and II." *Elementary School Journal.* 23:436-443. February, 1923.

A group of primary teachers in the Winnetka public schools made three separate studies to determine what phonograms should be taught in Grades I and II.

WASHBURNE, C. W. "The attainments of gifted children under individual instruction." *Twenty-Third Yearbook of this Society.* Bloomington, Ill., Public School Publishing Company, 1924. Part I, pp. 247-261.

This is a preliminary report of the investigation made under a subvention of the Commonwealth Fund. In form it is a statistical study of the effects of individual instruction as carried on in Winnetka.

WASHBURNE, C. W. "Basic facts needed in history and geography: a statistical investigation." *Twenty-Second Yearbook of this Society.* Bloomington, Ill. Public School Publishing Company, 1923. Part II. pp. 216-233.

Describes how the Winnetka Social Science Seminar scientifically determined just what facts in history and geography were essential for pupils to know.

WASHBURNE, C. W. "Building a fact course in history and geography." *Twenty-Second Yearbook of this Society.* Bloomington, Ill. Public School Publishing Company, 1923. Part II, pp. 99-110.

An account of how the Winnetka course was constructed, after the relative importance of persons, places, and events had been decided upon.

WASHBURNE, C. W. *Common Science.* Yonkers-on-Hudson, N. Y., World Book Company, 1920. 390 pp.

A textbook whose subject matter was determined by a statistical study and arranged according to sound, psychological principles. The organization of each lesson is also commendable. After an extensive period of being tried out in mimeographed form, it was rewritten and published. Especially helpful in individual instruction.

WASHBURNE, C. W. "A democratized school system." *American School Board Journal.* 62:42-43. March, 1921.

The Winnetka system secures democratization through (1) pupil self-government, (2) flexibility of program and method, (3) teacher participation in selecting textbooks and organizing courses of study, and (4) salary schedule committee of teachers.

WASHBURNE, C. W. "Description of a unit of work as carried out in the Winnetka public schools, emphasizing individual responsibilities." *Journal of Rural Education.* 3:362-363. April, 1924.

Abstract of an address. Describes how each child learns by teaching himself.

WASHBURNE, C. W. "Educational measurements as a key to individual instruction and promotions." *Journal of Educational Research.* 5:195-206. March, 1922.

One of the best accounts of the individual system used in the Winnetka, Illinois, schools.

WASHBURNE, C. W. "Fitting the curriculum to individual children." *New Republic, Special Educational Section.* Vol. 40, Part 2. pp. 10-11. November 12, 1924.

In the Winnetka, Illinois, schools the curriculum provides for the individual differences of pupils (1) by requiring of each the mastery of certain essential knowledges and skills at his own rate of progress and (2) by providing for each child self-expression and the opportunity to contribute to the group something of his own special interests and abilities.

WASHBURNE, C. W. "Goal books in the Winnetka schools." *American School Board Journal.* 63:32. December, 1921.

"Goal books contain a definite outline of the exact units of work to be accomplished in each grade." When a goal is reached, an 'O. K.' is recorded opposite it. Parents examine the books monthly.

WASHBURNE, C. W. *Individual Arithmetics.* Yonkers-on-Hudson, N. Y., World Book Company. (In press.)

"These are self-instruction books in arithmetic, published for use in connection with the Winnetka plan of individualized work and following the general recommendations made in Section V of this *Yearbook.*"

WASHBURNE, C. W. "Individual instruction in the Winnetka schools: answers to questions." *Chicago Schools Journal,* 3:271-275. March, 1923; also in *Detroit Journal of Education.* 3:53-56. October, 1922.

The essential features of this system are pointedly explained by means of the question and answer method.

WASHBURNE, C. W. *Individual Speller and Teacher's Manual.* Yonkers-on-Hudson, N. Y., World Book Company, 1924. 83 pp.

The word list which is used in the teaching of spelling in the Winnetka schools and the manual describing how it is done.

WASHBURNE, C. W. "The individual system in Winnetka." *Elementary School Journal.* 21:52-68. September, 1920.

This plan permits promotion by subject whenever a pupil has completed the work definitely assigned up to a particular goal. The work is measured by complete and diagnostic tests and consists mainly in the use of practice material. Sufficient social activities are offered to counteract the individual work. The results of the first year of operation were very satisfactory.

WASHBURNE, C. W. "Individualized instruction in public schools." *Normal Instructor and Primary Plans.* 30:19-20, 64-66. May, 1921.

States briefly the general principles underlying individual instruction and discusses extensively the individualization of reading and spelling in particular. The entire address may be found in the *Journal of the*

Sixty-Seventh Annual Meeting of the Illinois State Teachers Association, 1920, under the title "Can public schools be fitted to the individual pupil?"

WASHBURNE, C. W. "Merits of the individual plan of instruction." *School Life*. 9:179. April, 1924; also in *School Topics, Cleveland Ohio*. 6:1, 3. April 30, 1924; and in *Journal of Education*. 99: 314. March 20, 1924.

Abstract of address before the Educational Research Association, February 28, 1924. Briefly lists some of the questions which the Commonwealth Fund investigation will undertake to answer.

WASHBURNE, C. W. "Motives and goals in education." *Journal of Education*. 96:92-94. August 10, 1922.

Goals, to be effective, should be inherent in the work, definite, attractive, and near. In Winnetka, the course of study is re-phrased in terms of goals to be achieved in each subject.

WASHBURNE, C. W. "Should a school keep a child back? The new individual instruction as told to John Amid." *Collier's*. 72:11-12. November 24, 1923.

A popular account of the Winnetka plan, its origin, development, and present status. Written for fathers and mothers.

WASHBURNE, C. W. "A spelling curriculum based on research." *Elementary School Journal*. 23:751-762. June, 1923.

A study of the preparation of appropriate lists of words for Grades III to VI inclusive, two lists for each grade. The individual method of teaching these is fully described.

WASHBURNE, C. W. "Teaching in terms of the individual child." *Journal of Rural Education*. 3:206-213. January, 1924.

A description of various European schools in which methods of individual instruction are used.

WASHBURNE, C. W. "The Winnetka fact-course in social science." *Historical Outlook*. 25:362. November, 1924.

A communication in which the author answers certain questions which have been raised in regard to the Winnetka experiment.

WASHBURNE, C. W. "The Winnetka plan." *Educational Research Bulletin, Ohio State University*. 3:211-213. September 3, 1924.

A letter in which attention is called to the amount of socialized work done in Winnetka schools.

WASHBURNE, C. W. "The Winnetka plan of individual work." *Teachers World, London.* 28;612, 648. December 20 and 27, 1922.

A comparative study of the Dalton and Winnetka plans.

WASHBURNE, C. W. "The Winnetka system." *Progressive Education.* 1:11-18. April, 1924.

The three chief aspects of this system are to give each child complete development through a mastery of common essentials, the opportunity to do creative work, and the realization that he is a member of the social organism.

Part II. Classification, Ability Grouping, and Promotion Plans [3]

Odell, C. W. *An Annotated Bibliography Dealing with the Classification and Instruction of Pupils to Provide for Individual Differences.* Urbana, Ill., University of Illinois, 1923. 50 pp. (University of Illinois Bulletin. Vol. 21, No. 12. November 19, 1923. Bureau of Educational Research, College of Education Bulletin, No. 16.)

The best and most complete bibliography which has yet appeared on the classification, promotion, and grouping of pupils to provide for individual differences. The following entries will supplement this bibliography and bring it up-to-date. None of its 346 titles will be duplicated.

Ashbaugh, E. J. "Homogeneous or non-homogeneous grouping." *Journal of Educational Research.* 9:241-245. March, 1924.

An editorial in which the two types of grouping are discussed. The alleged undesirable features of ability grouping and the proposed remedy are carefully examined.

Austin, C. M. "An experiment in testing and classifying pupils in beginning algebra." *Proceedings of the High School Conference.* Urbana, Ill., University of Illinois, 1923. pp. 294-302. (University of Illinois Bulletin. Vol. 21, No. 25. February 18, 1924.)

An account of an experiment the purpose of which was to show if some relation could be discovered between general intelligence as revealed by the Otis test and school grades in algebra, and whether this test was a sound basis for classifying pupils for the study of algebra and other school subjects. There are six charts and considerable statistical data.

Baldwin, B. T. "The grouping of pupils by abilities in elementary and high schools." *Tenth Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1923. pp. 50-62. (University of Pennsylvania Bulletin. Vol. 23, No. 38. June 9, 1923.)

Discusses the physiological, the mental, the pedagogical, and the social ages in relation to grouping of pupils in school. No scientific promotion plan can be developed without these fundamental groups of abilities being taken into consideration.

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[3] In Part II none of the 346 titles given in the annotated bibliography by C. W. Odell will be duplicated. The reader should therefore combine the two bibliographies for a complete list.—*Editor.*

BEESON, M. F. and TOPE, R. E. "The educational and accomplishment quotients as an aid in the classification of pupils." *Journal of Educational Research.* 9:281-292. April, 1924.

In the intermediate and upper grades, pupils should be classified, promoted, or demoted on the basis of educational age, and classes should be sectioned according to the educational quotient. In the primary grades intelligence tests, together with the teacher's judgment, should be the basis of classification.

BLUMENTHAL, FRANCES. "A new method for approximating the homogeneous grouping of school children." *Educational Administration and Supervision.* 10:321-329. May, 1924.

A description of a new method of grouping, based on the quotients calculated from age-grade data.

BOWERS, E. V. "Reclassification to semiannual promotions." *Educational Research Bulletin, Ohio State University.* 3:82-84. February 20, 1924.

After a testing program had been put on at Tippecanoe City, Ohio, the pupils were reclassified. The article discusses the promotions which followed.

BOWERS, E. V. *Standardized Tests and Flexible Promotion in Tippecanoe City, Ohio.* 1922. Thesis (M.A.) Ohio State University. 84 typewritten pages.

A testing program including both intelligence tests and educational tests, constituted a survey whose chief purpose was to secure data with which to deal with the individual in reclassification.

BRACEWELL, R. H. "Segregation in ability groups as a means of taking account of individual differences." (In National Education Association. *Addresses and Proceedings, 1921.* pp 674-675.)

Argues that individual instruction is expensive and unsocial and that to care for pupils differing widely, sections must be formed on the basis of ability.

BRAINERD, M. S. "Intelligence testing at Martins Ferry." *Educational Research Bulletin, Ohio State University.* 2:67-70. March 7, 1923.

An account of a classification scheme based on intelligence testing. Instruction was differentiated according to the character of the section and a flexible promotion system was adopted. A revised course of study is the present need.

BREED, F. S. "Teaching the class and reaching the pupil." *School and Society.* 18:691-696. December 15, 1923.

Advocates that the next practical steps for the schools in adjusting instruction to the varying capacities of pupils is to adopt homogeneous grouping based upon ability and course differentiation.

BREED, F. S. "Use of tests in classification." (in *Public School Methods*. Rev. ed. Chicago, School Methods Publishing Company, 1921. Vol. 3, pp. 138-147.)

BRIGGS, T. H. "Individual differences." (In his *The Junior High School*. Boston, Houghton Mifflin Company, 1920. pp. 133-152.)

States that pupil differences have been met by the schools by adjustments such as these: differentiated curricula; promotion by subject, double promotion, and irregular promotion; minimal essentials; homogeneous grouping of pupils, etc.

BRIGGS, T. H. "Provisions for abilities by means of homogeneous grouping." *Third Yearbook of the National Association of Secondary-School Principals*. Cicero, Ill. The Association, 1919. pp. 53-62.

After answering the objections which have been raised to the segregation of groups, the author proceeds to describe the experiment in classification which was conducted at the Speyer Experimental Junior High School, New York City. The results were gratifying.

BRINKLEY, E. S. "Individual differences and the junior high school." *Virginia Journal of Education*. 18:3-6. September, 1924.

Proposes that the differentiated curricula with guidance of pupils, and homogeneous ability groups will accomplish much in providing for individual differences.

CALIFORNIA COUNCIL OF EDUCATION. "Basis for determining grading and promotion of pupils." *Sierra Educational News*. 20:86-87. February, 1924.

Personal, mental, scholastic, and social elements must be considered in determining promotion. Standards for promotion to low-seventh-grade classes are listed.

CHASE, L. S. "The need and use of testing in the elementary school." (In National Education Association. Department of Elementary School Principals. *Second Yearbook*. pp. 267-275. Bulletin, Vol. 2, No. 4. July, 1923.)

After having made a study of teachers' marks to show how unreliable they were for grouping purposes, the teachers of the Glenfield School at Montclair, New Jersey, approved the introduction of standard educational and mental tests for this purpose. The results of a two years' trial are most satisfactory.

"Classification and promotion of pupils." (In U. S. Bureau of Education. *Report of the Commissioner, 1898-99.* pp. 303-356.)

Contents: "The development of the short-interval system in St. Louis," by W. J. Harris; "The Elizabeth plan of grading," by W. J. Shearer; "The Seattle plan of promotion and classification," by F. J. Barnard; "Plan of the North-side schools of Denver," by J. H. Van Sickle; "Promotions in the grammar schools of Cambridge, Massachusetts," by Francis Cogswell; and "The grading and promotion of pupils," by J. T. Prince.

COOK, R. R. "A study of the results of homogeneous grouping of abilities in high-school classes." *Twenty-Third Yearbook of this Society.* Bloomington, Ill., Public School Publishing Company, 1924. Part I, pp. 302-312.

This study seeks to determine by experimentation, under controlled conditions, whether pupils are really benefited by being segregated according to ability. No special teaching methods were formulated. The evidence gathered would not justify homogeneous grouping.

COURTS, B. M. "The adaptation of subject matter and instructional methods to grammar-grade groups of varying ability." *Elementary School Journal.* 24:773-779. June, 1924.

The seventh- and eighth-grade classes of the Longfellow School, Oak Park, Illinois, were divided into "Alpha," "Beta," and "Delta" groups. Work was adapted to the Alphas by assigning large units and problems, to the Betas and Deltas by more detailed assignments and supervision. Topics and problems are described to illustrate these points.

CUBBERLEY, E. P. "Classifying and promoting the pupils." (In his *The Principal and His School.* Boston, Houghton Mifflin Company, 1923. pp. 358-384.)

A summary of plans used for promotion, homogeneous grouping, and school adjustments for special classes.

CUBBERLEY, E. P. "Promotional plans." (In his *Public School Administration.* Boston, Houghton Mifflin Company, 1916. pp. 300-312.)

A discussion of the various promotional plans which have been devised to increase the flexibility of the grading machinery and break up the lock-step in the public schools.

DAVIS, HELEN. "Classification by intelligence tests in the smaller schools." (In National Education Association. Department of Elementary School Principals. *Second Yearbook.* pp 210-219. Bulletin, Vol. 2, No. 4. July, 1923.)

Suggests the following administrative devices for improving classification double promotion, sectioning within a room by subjects, the special-help teacher, controlling entrance to the first grade, and the special room. Gives advice on the administration of the tests.

DEMPSEY, C. H. "Promotion of pupils." (In U S. Bureau of Education. *Special Features in City School Systems.* Washington, Government Printing Office, 1913. pp. 33-37. Bulletin, 1913, No. 31.)

Describes the older plan of promotion used in the Malden, Massachusetts, schools as well as the revised one. Individual differences will be much better provided for under the new.

DICKSON, V. E. "What first-grade children can do in school as related to what is shown by mental tests." *Journal of Educational Research.* 2:475-480. June, 1920.

A description of an experiment which bears evidence that the plan of segregating in the first grade is advantageous.

DIETRICH, H. O. "Educational practices growing out of homogeneous grouping by abilities in Norristown." *Eleventh Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1924. pp. 84-93. (University of Pennsylvania Bulletin. Vol. 24, No. 38. June 7, 1924.)

"Describes the plan at Norristown, Pa., for modifying the curriculum and method of presentation to fit each ability group. Presents numerous graphs in support of his contention that such modification can lead to uniform advancement and superior achievement."

DITMARS, THOMAS. "Intelligence tests as a basis for classification and grading." *Education.* 44:33-39. September, 1923.

Cites a number of experiments in which grouping by objective tests has proved superior to former methods of grouping.

DOOLITTLE, H. S. "Negaunee adopts modified plan of grouping pupils according to ability." *Michigan Education Journal.* 1:147-149. December, 1923.

After seven years of dividing the sixth, seventh, and eighth grades into four homogeneous sections as determined by teachers' judgments, the plan was abandoned as unsatisfactory. The nine objections which were raised to it are presented. The new groups are heterogeneous, depending upon the rearrangement of subject matter and different methods of instruction to take care of individual differences.

DOTEN, WILLARD. "Junior-high-school grouping." *American School Board Journal.* 64:42-43, 136. April, 1922.

A description of the groupings which were made in the Montclair, New Jersey, junior high schools for a period of six years. Seven tables and three charts serve to illustrate the text.

EISENHART, W. W. "Changes in educational procedure in Tyrone growing out of the grouping of pupils by abilities." *Tenth Annual Schoolmen's Week Proceedings*. Philadelphia, The Press of the University of Pennsylvania, 1923. pp. 69-74. (University of Pennsylvania Bulletin. Vol. 23, No. 38. June 9, 1923.)

Classes are divided into three groups upon the basis of achievement test scores and teachers' rating. Provision is made for the easy transfer of pupils from one group to another and from grade to grade.

ENGEL, A. M. "Characteristic and significant differences between X and Z pupils in the Detroit public schools." *Elementary School Journal*. 24:747-754. June, 1924.

Groups of pupils classified on the basis of intelligence show differences in physical, moral, pedagogical, and social development.

FEINGOLD, G. A. "The sectioning of high-school classes on the basis of intelligence." *Educational Administration and Supervision*. 9:399-415, 467-486. October and November, 1923.

Homogeneous grouping was tried out at the Hartford Public High School with the class entering September, 1922. The article explains how the grouping was administered, to what extent scholarship was increased, what final conclusions may be drawn from the experiment, and how the teachers viewed it.

FISHER, J. M. "Educational practices growing out of the homogeneous grouping of pupils in Ambler." *Eleventh Annual Schoolmen's Week Proceedings*. Philadelphia, The Press of the University of Pennsylvania, 1924. pp. 109-113. (University of Pennsylvania Bulletin. Vol. 24, No. 38. June 7, 1924.)

"Shows by table and graph wide variations in individual achievement on Stanford achievement test."

FLYNN, M. C. "Classification according to the promotion age." (In National Education Association. Department of Elementary School Principals. *Second Yearbook*. pp. 194-209. Bulletin, Vol. 2, No. 4. July, 1923.)

Discusses the way in which the Micheltorena Street School of Los Angeles has met the needs of individual pupils. It develops a more flexible system of gradation by providing for a plan of homogeneous grouping, a maximal-minimal course of study, subject promotion, adjustment periods, and progress at individual rate of speed.

FORD, E. L. "Unit system of grading and promotion." *Education.* 39:389-402. March, 1919.

A system which approximates individual teaching by using a grading which is constantly changing according to the attainments of the pupils. The system is explained and illustrated and its advantages listed.

FRANZEN, RAYMOND. "The accomplishment quotient: a school mark in terms of individual capacity." *Teachers College Record.* 21:432-440. November, 1920.

Advocates that the accomplishment quotient is the proper measure to use in deciding whether a child is properly classified or not. Believes that it would also be an ideal school mark.

FRASIER, G. W. "The measurement of intelligence as an aid to administration." *Educational Administration and Supervision.* 6:361-366. October, 1920.

Devoted almost exclusively to case studies. Individual pupils were correctly graded by means of mental tests and their subsequent progress noted.

FREEMAN, F. N. "Sorting the students." *Educational Review.* 68:169-174. November, 1924.

"This is a timely and judicious discussion of the reasons for and against the growing practice of grouping students according to ability and achievement tests."

GERSON, A. J. "The Philadelphia experiment in ability grouping." *Tenth Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1923. pp. 62-64. (University of Pennsylvania Bulletin. Vol. 23, No. 38. June 9, 1923.)

Three ability groups are recognized—a superior group, an average group, and an inferior group. These were selected on the basis of the judgment of the teachers, supplemented by the use of standard intelligence tests. Emphasis is placed on a differentiated curriculum, minimal essentials, incidental promotion, and teaching methods adjusted to varying needs.

GIBSON, J. E. "Double promotion in McComb city schools." *American School Board Journal.* 67:100-103. September, 1923.

Explains the plan of double promotion as used in the McComb, Mississippi, city schools to make provision for the bright pupil.

GOBLE, W. L. "Report on homogeneous grouping in Illinois high schools." *Proceedings of the High School Conference, 1923.* Urbana, Ill., University of Illinois, 1924. pp. 55-63. (University of Illinois Bulletin. Vol. 21, No. 25. February 18, 1924.)

A report based on the returns of a questionnaire. Special reports on homogeneous grouping in English, Latin, and mathematics, by J. G. Walker, Laura Woodruff, and E. W. Schreiber, respectively, are included.

"Grouping pupils on the basis of ability." (In Cleveland, Ohio. Board of Education. *The First of a Series of Surveys of the Department of Instruction, 1921.* pp. 18-21.)

An account of a plan of grouping pupils into classes on the basis of ability. It was first tried out in the first grades of several schools and in the 7B grades of all junior high schools during the school year 1920-21.

HAGGERTY, M. E. "Specific uses of measurement in the solution of school problems." *Seventeenth Yearbook of this Society.* Bloomington, Ill., Public School Publishing Company, 1918. Part II, pp. 25-40.

The individual differences which tests reveal must alter profoundly the whole program of education. The article enlarges upon the changes suggested by a questionnaire.

HARDWICK, F. T. "An experimental use of intelligence tests in classification." (In National Education Association. Department of Elementary School Principals. *Second Yearbook.* pp. 219-229. Bulletin, Vol. 2, No. 4. July, 1923.)

The Central School of Everett, Washington, housing the majority of the eighth grades of the city, was the seat of this experiment. The article indicates the procedure and the results made in the use of intelligence tests for arranging pupils in groups. These groups are also compared as to their standing in educational tests. Eight tables are included.

HARRIS, W. T. "Class intervals in graded schools." (In National Education Association. *Addresses and Proceedings, 1900.* pp. 332-340.)

While the author disapproves of individual instruction, he does favor continual readjustment of classification to provide for differences in rates of progress.

HARTWELL, C. S. "Liberating the lower education." *School Review.* 15:436-458. June, 1907.

Composed largely of random quotations taken from six hundred responses to a questionnaire on the advisability of promotion by subject.

HARTWELL, C. S. "Promotion by subject and three-year courses." *School Review.* 15:184-196. March, 1907.

The opinions of many leading educators are cited in proving this contention. Promotion by subject is advocated for at least the upper six grades.

HENRY, T. S. "Flexible promotion schemes as related to the school progress of gifted children." *Nineteenth Yearbook of this Society.* Bloomington, Ill., Public School Publishing Company, 1920. Part II, pp. 11-27.

A summary and brief discussion of different plans of grading and promotion. An examination will show that each makes some provision for capable pupils.

HORN, J. L. "The classification of pupils for purposes of instruction." (In his *The American Elementary School.* New York, The Century Company, 1923, pp. 227-251.)

Although the chronological age of pupils has been the chief determinant in their grouping, their intelligence status has recently been replacing it. Their physiological, emotional, and maturity age will be the next factors to be considered. A differentiated education must come, setting up varying goals for varying groups in both qualitative and quantitative terms.

HUGHES, W. H. "Capacity levels and scientific classification." *American Educational Digest.* 43:11-12. September, 1923.

Scientific classification requires that elementary schools of eight grades should have at least one thousand pupils each. This would make possible five parallel tracks, each with its appropriate curriculum.

JOHNSON, F. W. "Classification of pupils according to ability." (In Bell, J. C. ed. *Contributions to Education.* Yonkers-on-Hudson, N. Y., World Book Company, 1924. Vol. 1, pp. 214-220.)

A discussion of the various methods employed in segregating pupils with detailed description of the plan used in the Horace Mann Schools.

JUDD, C. H. "Grouping pupils in classes." (In his *Introduction to the Scientific Study of Education.* New York, Ginn and Company, 1918. pp. 96-112.)

Discusses the reasons which validate sectioning, suggests readjustments of the curriculum, and describes changes which have been made in the grading system in order to meet individual needs.

KALLOM, A. W. "Intelligence tests and the classroom teacher." *Journal of Educational Research.* 5:389-399. May, 1922.

Intelligence tests may be used successfully in guiding teachers in making promotions and dealing with individual pupils, in guiding pupils in the choice of courses, in advancing demoted pupils, and in sectioning grades.

KENNEY, ELIZABETH. "Intelligence tests at work." *Journal of Educational Method.* 3:147-152. December, 1923.

In classifying the pupils in the Junior High School of Waterloo, Iowa, a compromise method was used. This method adds together the pupil's score and his index of brightness. The composite judgment of the teachers was also taken into account. A chart illustrates the method devised for sectioning.

LAIRD, D. A. "A study of the influence of sectioning students upon their achievement." *Journal of Educational Psychology.* 14:143-153. March, 1923.

Reports the findings of a study of the marks received by students in an elementary course in college psychology for a ten-year period. The students were divided into two heterogeneous sections meeting at nine and eleven o'clock, respectively.

LAU, ARNOLD. "Adaptation to group needs on ability bases in ninth-grade English." *Sixth Yearbook of the National Association of Secondary-School Principals.* Cicero, Ill., The Association, 1922. pp. 63-85.

Minimal requirements for the three-fold sections are definitely stated together with the results of grammar and composition tests. Emphasizes that sectioning is merely a device for individualizing instruction. A good discussion by R. H. Bracewell followed the address.

LAYTON, W. K. "The group intelligence testing program of the Detroit public schools." *Twenty-First Yearbook of this Society.* Bloomington, Ill., Public School Publishing Company, 1922. Part II, pp. 123-130.

The group tests are instruments in classifying pupils into X, Y, and Z groups when they enter school for the first time, are given to pupils who are two years or more over age for their grade, and to candidates for entrance to special advanced classes.

LAYTON, W. K. "The reclassification of pupils in one elementary school." (In National Education Association. Department of Elementary School Principals. *Second Yearbook.* pp. 239-246. Bulletin, Vol. 2, No. 4, July, 1923.)

A discussion of the resectioning of the Dwyer School of Detroit and of some of the results obtained. Ten tables included.

LOWRY, ELLSWORTH. "New tendencies in the organization of education." *Educational Administration and Supervision.* 6:27-32. January, 1920.

Deals with an experiment in the first six grades of the Training School in the Winona State Normal School to solve the problem of individual differences and of retardation. Homogeneous grouping was the remedy which proved decidedly effective.

LUKENS, M. L. "Educational practices growing out of grouping by abilities in Upper Darby." *Eleventh Annual Schoolmen's Week Proceedings*. Philadelphia, The Press of the University of Pennsylvania, 1924. pp. 94-104. (University of Pennsylvania Bulletin. Vol. 24, No. 38. June 7, 1924.)

"Presents results of surveys of Grades V, VI, and VII, in Upper Darby, where children are grouped by ability. Gives full tables. Concludes that, even after reclassification, the problem of the individual child still exists."

MCCALL, W. A. "Measurement in classifying pupils." (In his *How to Measure in Education*. New York, The Macmillan Company, 1922. pp. 19-66.)

A statistical study of classifying pupils by means of intelligence tests, educational tests, and teachers' judgment. Rules for the procedure in reclassifying both the small and large school are given.

MCFARLAND, B. B. "A study of first-grade promotion control." *Kindergarten and First Grade*. 8:45-52. February, 1923.

Describes the procedure which was adopted in dividing a first-grade class of fifty-three children. Many case studies are reported.

MACKIE, A. "The formation of class groups." *Schooling, Sydney, N.S.W.* 7:10-24. October, 1923.

A theoretical treatment of homogeneous class groups. Such groups must be composed of pupils of nearly equal natural capacity and scholastic attainments, selected by means of mental and scholastic tests. A four-fold scheme of grouping is described and recommended.

MASTON, R. C. "Classification of students based on mental tests." *Proceedings of the Second Annual Educational Conference*. Columbus, Ohio, The Ohio State University, 1922. pp. 98-106. (The Ohio State University Bulletin. Vol. 27, No. 16. March 24, 1923.)

The seventh, eighth, and ninth grades of the Martins Ferry, Ohio, public schools have been trying a grouping scheme. The plan is carefully explained. Suggests what readjustment of courses and modified methods of instruction should follow such procedure.

MATHEWS, M. E. "Grouping pupils in English according to ability." *Tenth Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1923. pp. 291-296. (University of Pennsylvania Bulletin. Vol. 23, No. 38. June 9, 1923.)

A questionnaire was sent to the English departments of about thirty high schools throughout the country and the eleven high schools in Philadelphia. The deduction drawn from the replies is that, while grouping is desirable, there is a feeling of uncertainty as to the retarded group.

MEEK, C. S. "A study in retardation and acceleration." *Elementary School Journal.* 15:421-431. April, 1915.

The Boise, Idaho, schools use an individual standard in promoting pupils. The results claimed are (1) less cost per pupil (2) increased school attendance (3) less congestion in lower grades and (4) better treatment of exceptional pupils.

MILLER, W. S. "The administrative use of intelligence tests in the high school." *Twenty-First Yearbook of this Society.* Bloomington, Ill., Public School Publishing Company, 1922. Part II, pp. 189-222.

Intelligence tests satisfactorily function in sectioning classes on the basis of mental ability. They make possible an adaptation of the technique of instruction to the needs of the group and may make competition operative as an incentive.

MITCHELL, DAVID. "Psychological examination of pre-school age children: a demonstration of the classification of children according to ability." *Pedagogical Seminary.* 31:108-146. June, 1924.

A detailed, statistical report of an experiment conducted in three schools by the New York State Association of Consulting Psychologists. There are twelve charts and twenty-four tables.

MITCHELL, G. W. "Promotion of pupils." *American School Board Journal.* 48:65-66. April, 1914.

Describes the system of promotion and the method of assigning pupils to groups as practiced in the Johnsonburg, Pennsylvania, schools.

MONROE, W. S. *Relation of Sectioning a Class to the Effectiveness of Instruction.* Urbana, Ill., University of Illinois, 1922. 18 pp. (University of Illinois Bulletin. Vol. 20, No. 11. November 13, 1922. Bureau of Educational Research, College of Education Bulletin, No. 11.)

Three plans of sectioning were tried out in sixteen elementary schools of Chicago. The monograph states the problem, outlines the plan of the experiment, summarizes the data, and interprets the results.

MOORE, W. E. "Mental tests used as a basis for reorganizing a school." (In National Education Association. Department of Elementary School Principals. *Bulletin.* Vol. 2, No. 3. pp. 124-129. April, 1923.)

"A resume of the experiences in classifying and regrouping the pupils of Longfellow Sch[illegible] Oakland, California."

MORRIS, F. A. "A plea for flexibility in promotion: a scheme for getting it." *American School Board Journal.* 57:28-29. November, 1918.

Advocates promotion by subject in the grades as the ideal way to give a child just the right amount of time to do work thoroughly without wasting time or overdoing.

MORRISON, H. C. *The Teaching Technique of the Secondary School.* Ann Arbor, Mich., Edwards Brothers, 1924. pp. 71-94.

MORTON, R. L. "The classification of pupils in Ohio public schools." *Educational Research Bulletin, Ohio State University.* 3:317-321. November 12, 1924.

A comprehensive summary of the report prepared by the Classification Committee appointed by Vernon M. Riegel, State Director of Education in Ohio.

MOYER, E. L. "A study of the effects of classification by intelligence tests." *Twenty-Third Yearbook of this Society.* Bloomington, Ill., Public School Publishing Company, 1924. Part I, pp. 313-322.

The achievement of high-school pupils who were grouped into classes on the basis of their standing in intelligence tests is compared with pupils of like ability who were taught in mixed classes. The comparison is made by measuring their attainment in algebra and Latin by standardized tests and teachers' marks.

NOBLE, H. M. *Classification of School Children According to Mental Age.* 1920. Thesis (M.A.) Ohio State University. 47 typewritten pages.

A record of the testing and the reclassification of pupils on the basis of the testing which took place in the Northwood Public School of Columbus, Ohio, from October, 1919, to the middle of January, 1920.

ODELL, C. W. "The double-track system in a small school." *Elementary School Journal.* 22:544-546. March, 1922.

Describes a system which brings a more flexible type of organization to a small school by providing sections for pupils of varying ability.

ODELL, C. W. *Provisions for the Individual Differences of High-School Pupils. Urbana, Ill., University of Illinois,* 1923. 155 pp. (University of Illinois Bulletin. Vol. 21, No. 4. September 24, 1923. Bureau of Educational Research, College of Education Circular No. 22.)

Nine different plans which have been actually used in high schools are described.

ODELL, C. W. *The Use of Intelligence Tests as a Basis of School Organization and Instruction.* Urbana, Ill., University of Illinois, 1922. 78 pp. (University of Illinois Bulletin, Vol. 20, No. 17. December 25, 1922. Bureau of Educational Research, College of Education Bulletin, No. 12.)

A report of an experiment carried on in eight elementary schools of Chicago to determine whether or not it is advisable to promote and classify pupils on the basis of mental age and intelligence quotients.

OGLESBY, ELIZA. "A study of the achievements in reading of the X, Y, Z groups." *Detroit Journal of Education,* 2:57-59. April, 1922.

OHIO. State Department of Education. Classification Committee. *The Classification of Pupils in the Elementary Schools.* Columbus, Ohio, The Heer Printing Company. (In press.)

"The findings of a committee (B. R. Buckingham, Chairman) appointed by State Superintendent Vernon M. Riegel to inquire into the extent to which grouping, classification, and segregation of pupils were in effect in Ohio. The reports indicates the bases, methods, and results secured by these administrative adjustments and makes certain recommendations. Problems are suggested and a bibliography is appended."

PARK, F. R. "A grading and promotion plan based on the use of intelligence and educational tests." *Elementary School Journal.* 24:219-226. November, 1923.

An account of the plan in operation in the public schools of Hamburg, New York.

PARKER, C. M. "Group work in reading." *Detroit Journal of Education,* 3:21-24. September, 1922.

Discusses a plan of conducting reading classes organized into groups according to three levels of pupil ability. Contains a description of a typical lesson.

PECHSTEIN, L. A. "Homogeneous grouping of high-school pupils by intelligence tests." *Proceedings, Third Annual Ohio State Educational Conference.* Columbus, Ohio, Ohio State University, 1923. pp. 352-353. (The Ohio State University Bulletin. Vol. 28, No. 2. August 31, 1923.)

An abstract of an address in which homogeneous ability grouping is justified because it recognizes differences in individuals, facilitates in adapting curriculum requirements to individual capacity, and creates the proper environment for natural expression.

PITTENGER, B. F. "The school and the individual." *American Schoolmaster.* 9:193-205. May, 1916.

"The author maintains that the school should give special attention to the quantitative aspects of inherent variations and to the qualitative aspects of acquired differences by providing a very flexible system of promotion throughout each school course."

"Recognizing individual differences." *Elementary School Journal.* 21:164-166. November, 1920.

A description of a modification of the Cambridge plan of grading which was introduced into the school system of Staunton, Virginia.

ROWLAND, S. V. "Changes in educational procedure growing out of the grouping of pupils by ability." *Tenth Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1923. pp. 64-69. (University of Pennsylvania Bulletin. Vol. 23, No. 38. June 9, 1923.)

The article is devoted to the methods used with the various groups in the Radnor Township, Pennsylvania, schools. It states, however, that considerable individual instruction is given in regular coaching periods.

RUEDIGER, W. C. "Homogeneous grouping of pupils." *Eleventh Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1924. pp. 78-84. (University of Pennsylvania Bulletin. Vol. 24, No. 38. June 7, 1924.)

"Discusses article by Herbert D. Bixby in *Educational Review* for April, 1924. Concludes that 'the homogeneous grouping of pupils and other well-organized plans for meeting different degrees of ability are an essential element in the administration of education in a democracy.'"

SANTEE, A. M. "Results of classification of pupils based on ability as shown by intelligence tests, tests of achievement, and teachers' marks." (In National Education Association. Department of Elementary School Principals. *Second Yearbook.* pp. 276-283. Bulletin, Vol. 2, No. 4. July, 1923.)

Discusses the results of classification in the Washington Junior High School, Duluth, Minnesota. Includes the course of study offered in shop mathematics.

SCHLEIN, W. C. "Individual differences: their recognition in the elementary and junior high schools." *Popular Educator.* 41:69-70. October, 1923.

Differentiated curricula, homogeneous grouping, irregular promotions, tutoring, and supervised study are advocated as the means of adjusting instruction to these differences.

SEARS, J. B. "Grading and promoting." (In his *Classroom Organization and Control.* Boston, Houghton Mifflin Company, 1918. pp. 123-143.)

To meet the demands of individual differences, different types of flexibility in grading and promotion have been devised. This chapter discusses some of these types.

SEASHORE, C. E. "College placement examinations." *School and Society.* 20:575-578. November 8, 1924.

Believes that the placement examination will furnish for higher education the most effective principle of recognizing the individual. Advocates the use of placement examinations in sectioning university and college classes. Describes those which have been formulated at the State University of Iowa.

SEASHORE, C. E. "Gifted student and research." *Science,* n.s. 56:641-648. December 8, 1922.

Universities and colleges are advised to follow certain procedures in the case of students of superior ability. The following procedures are discussed: sectioning classes on the basis of ability, honor courses, early contact with mature teachers, flexibility as to length of time for degree, and comradeship with teachers.

SEASHORE, C. E. "Recognition of the individual." *Science.* n.s. 60: 321-325. October 10, 1924; also in *Journal of Engineering Education. n.s.* 15:111-122. October, 1924.

Professional schools may so change from traditional methods that precise recognition of the individual may be achieved. Suggests the following program: (1) college qualifying examination, (2) department placement examinations, (3) sectioning of classes, (4) educational guidance, (5) spread of assignment, and (6) reward of the individual.

SEASHORE, C. E. "The role of a consulting supervisor in music." *Eighteenth Yearbook of this Society.* Bloomington, Ill., Public School Publishing Company, 1919. Part II, pp. 111-123.

Suggests as a true solution, both in economy of time and efficiency of achievement in music, that three divisions be made of each grade or small group of grades, with continual shifting from one division to another as ability warrants, and with free promotion or demotion.

SHEARER, W. J. "Faulty grading in our public schools." *Forum.* 33: 469-473. June, 1902.

Pleads for greater freedom in the work of the public schools, and especially for more elasticity in the method of classification. Each pupil should be advanced as fast as his abilities warrant.

SHELDON, V. G. "Speed grouping in primary grades of Rockford, Illinois." (In National Education Association. Department of Elementary School Principals. *Second Yearbook.* pp. 229-239. Bulletin, Vol. 2, No. 4. July, 1923.)

Groups are arranged according to mental age and are administered according to the enrolment and the building conditions. The advantages noted are the improvement of classroom instruction, the enrichment of the curriculum, the emphasis on minimal essentials, an enlarged opportunity for the study of individual differences, and the economy of the new system.

SHERROD, C. C. "Grouping pupils for instructional purposes." *American School Board Journal.* 67:34-36, 123. December, 1923.

The subject is treated under the following captions: (1) a brief history of grouping pupils, (2) the three outstanding types of grouping, (3) cases illustrating present practice, (4) statement of findings in other places, and (5) summary of conclusions.

SONDBERG, DOWETT. "Educational practices growing out of the homogeneous grouping of pupils." *Eleventh Annual Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1924. pp. 113-119. (University of Pennsylvania Bulletin. Vol. 24, No. 38. June 7, 1924.)

"Discusses problems connected with homogeneous grouping, under heads of grading pupils, curriculum, size of classes, selection of teachers, discipline, and method. Gives graphically the effects of homogeneous grouping. A worth while contribution."

STENQUIST, J. L. "Better schools through improving the classification of pupils." *Baltimore Bulletin of Education.* 2:170-173, 176-177. January, 1924.

Under the direction of its Bureau of Research, twenty-two schools in Baltimore have been reclassified as a result of a testing program. The principals of the schools are pleased with the results and many pupils have been decidedly benefited.

STOCKTON, J. L. AND OTHERS. "Criteria for the regrading of schools." *Elementary School Journal.* 22:55-66. September, 1921.

The criteria which are suggested as contributing to the successful reorganization of a school are the following: mental age, chronological age, physical age, pedagogical age, and character age. These criteria were used in an extensive reorganization program in the Training School of the San Jose State Normal School.

STONEBURNER, W. E. "Reclassification program for elementary grades in a small school." *Educational Research Bulletin, Ohio State University.* 3:215-218. September 3, 1924.

Describes how a scheme of classification was devised for a small school with an enrollment of 380 in the first six grades. The experience shows that classified pupils accomplish more work, discipline is easier, and the teachers are more content.

THEISEN, W. W. "The relative progress of VII-B groups sectioned on the basis of ability." *Journal of Educational Research.* 5: 295-305. April, 1922.

A presentation of the results of a study made by using standardized educational tests and teachers' ratings to determine the achievements of different sections of the VII-B grade. The results justify the policy of grouping pupils on the basis of ability.

TORGERSON, T. L. *A Program of Differentiation in the Elementary Schools Based upon Individual Differences.* West Allis, Wis., Department of Educational Measurements, Public Schools, 1924. 6 pp. (Bulletin No. 3.)

The school should adjust itself to individual differences by classifying pupils into more homogeneous groups, by differentiation of curricula, and by differentiation of rate of progress.

VAN DENBURG, J. K. "Speed grouping in the junior high school." (In his *The Junior High School Idea.* New York, Henry Holt and Company, 1922. pp. 36-57.)

Homogeneous grouping makes possible positive lines of work and prevention of waste. Then the course of study must be made to fit the rate of learning of the respective groups and class instruction must be combined with individual consideration of pupils' aptitudes.

WALTZ, C. A. "A four-year program of mental testing." *Proceedings, Third Annual Ohio State Educational Conference.* Columbus, Ohio, Ohio State University, 1923. pp. 113-123. (The Ohio State University Bulletin. Vol. 28, No. 2. August 31, 1923.)

A detailed account of a testing program as carried out in the Xenia, Ohio, schools. Its chief value has been to assist teachers to understand children as individual problems, to group them according to ability, and to establish more or less definite standards of attainment.

WERREMEYER, D. W. "The benefits of grouping students in mathematics on the basis of ability." *Proceedings of the Second Annual Educational Conference.* Columbus, Ohio, Ohio State University, 1922. pp. 300-303. (The Ohio State University Bulletin. Vol. 27, No. 16. March 24, 1923.)

In the West Technical High School of Cleveland, pupils in the IX-B and IX-A classes were classified in three sections upon the basis of intelligence tests, diagnostic tests, and teachers' estimates. Courses of study were adjusted to the groups and the material was taught in a cumulative way. The results were successful and satisfactory.

WISE, C. R. "Ability grouping from the administrator's viewpoint." *Proceedings of the Fourth Annual Ohio State Educational Conference.* Columbus, Ohio, Ohio State University, 1924. pp. 284-287. (The Ohio State University Bulletin. Vol. 29, No. 2. August 31, 1924.)

Indicates some of the problems which the program-maker has to overcome in order to establish successful ability grouping.

Part III. Supervised Study[4]

Breslich, E. R. "Supervised study as a means of providing supplementary individual instruction." *Thirteenth Yearbook of this Society.* Chicago, University of Chicago Press, 1914. Part I, pp. 32-72.

An excellent summary of the experiments in supervised study which have been conducted up to the year 1914. A selected bibliography of 19 titles is appended.

Holsinger, K. J. "Periodical literature on supervised study during the last five years." *Elementary School Journal.* 20:146-154. October, 1919.

A very helpful résumé of 24 of the best articles on supervised study, as found in periodical literature which have appeared since the *Thirteenth Yearbook* was published.

Entries Contained in Neither of the Foregoing Lists

Alberty, H. B. *Directing the study of pupils.* Cleveland, Ohio, Cuyahoga County Board of Education, 1922. 39 pp.

A suggestive and practical handbook for teachers and school administrators. Much of the material is quoted from standard authorities.

Armstrong, R. D. "Some aspects of supervised study in history." *History Teacher's Magazine.* 8:52-59. February, 1917.

Excellent and detailed account of the method used in Hammond, Indiana, High School.

Austin, Myrtle. "Supervised study in Idaho Falls High School." *Idaho Teacher,* 4:182-183. December, 1922.

The school day is divided into six periods of one hour each. One-half (or less) of a period is used for drill, testing, or recitation; the remainder is devoted to assignment and supervised study. The study plan adopted by the students is included.

Bacon, F. L. "The eighty-minute supervised study period." *American School Board Journal.* 63:45-46. September, 1921.

Describes the plan used in the Meriden, Connecticut, High School. It necessitates that all periods rotate, but this has the special advantage of providing that every subject appears once each week in the last period of the day. Time may easily be extended for special work with individual pupils. Most important result is the uniform gain in scholarship.

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[4]The present bibliography is limited to titles that do not appear in either the list of 19 titles reported by Breslich or the list of 24 titles reported by Holsinger.

BEAMAN, J. P. "Supervised study." *Ohio Teacher.* 45:160-161. December, 1924.

A brief discussion of supervised study. Some of the items of a questionnaire and the tabulated replies of eighteen principals are included.

BEAUCHAMP, W. L. "A preliminary experimental study of technique in the mastery of subject matter in elementary physical science." (In *Studies in Secondary Education, 1.* Chicago, University of Chicago, 1923. pp. 47-87. Supplementary Educational Monographs, No. 24. January, 1923.)

Detailed findings of an investigation to determine the value of certain study procedures. Twenty-five tables and six figures included.

BEAUCHAMP, W. L. "Supervised study in elementary physical science." *School Review,* 32:175-181. March, 1924.

An excellent and clear presentation of the procedure during the assimilation period in a class of beginning pupils in elementary physical science.

BELTING, P. E. "Supervised study." *Educational Administration and Supervision.* 2:160-162. March, 1917.

Brief description of the method employed in the Oskaloosa, Iowa, High School.

BOSTON HEADMASTERS' ASSOCIATION. *Report on Supervised Study.* Boston, Printing Department, 1920. 50 pp. (Boston Public Schools. School Document No. 12, 1920.)

Continues the study which was made by the High School Masters' Club of Massachusetts in 1917. The report consists principally of quotations from replies to a questionnaire. It shows that the advantages of supervised study seem to outweigh its disadvantages. A useful document.

BRACEWELL, MR. "The Springfield laboratory recitation plan: the third degree in supervised study." *Proceedings of the High School Conference.* Urbana, Ill., University of Illinois, 1916. pp. 216-227. (University of Illinois Bulletin. Vol. 14, No. 19. January 8, 1917. School of Education Bulletin, No. 17.)

Describes this plan by showing how it works when applied to geometry.

BRESLICH, E. R. "Supervised study in mathematics." *Proceedings of the High School Conference.* Urbana, Ill., University of Illinois, 1914. pp. 247-258. (University of Illinois. College of Education Bulletin, No. 13.)

Summarizes briefly typical experiments made to overcome the faults of the present system of instruction and describes rather fully the experiments in supervised study conducted in the University of Chicago High School. The technique for the administering of this study class and the advantages of this type of instruction are cited.

BRESLICH, E. R. "Supervised study in mathematics." *School Review.* 31:733-747. December, 1923.

Although the title of this article is the same as the preceding, the article itself is not. The author cites nine desirable study habits in general and lists seven strictly applicable to mathematics. He also discusses the technique of supervised study and the results of such study.

BROOKS, S. S. "Supervised study." (In his *Improving Schools by Standardized Tests.* Boston, Houghton Mifflin Company, 1922. pp. 246-273.)

Explains the difficulties in connection with supervised study and suggests silent-reading drill, the question method, finding the topic of a paragraph, and the construction of outlines as offering advantages in conducting this type of instruction. These methods are illustrated.

BROWN, J. S. "Supervised and directed study." (In National Education Association. *Addresses and Proceedings,* 1919. pp. 594-597); also in *Proceedings of the High School Conference.* Urbana, Ill., University of Illinois, 1919. pp. 50-52.

A general discussion of the theory of directed study.

BROWN, J. S. "Supervised study." *Proceedings of the High School Conference.* Urbana, Ill., University of Illinois, 1915. pp. 301-305. (University of Illinois. College of Education Bulletin, No. 15.)

A description of the double period plan of supervised study as practiced in the Joliet Township High School. Special attention is given to modern language.

BROWN, W. Q. "The improvement of instruction through supervised study." (In National Education Association. Department of Elementary School Principals. *Third Yearbook.* pp. 245-253. Bulletin, Vol. 3, No. 4. July, 1924.)

An account of two experiments in the Kennedy School, Cincinnati, Ohio. The first involved the construction and the giving of a standardized test to measure the ability of pupils to study; the second, the organization of a seminar class of teachers for the purposing of experimenting with the "mastery technique" in Grades IV to VIII, inclusive.

BROWN, W. W. "Making profitable use of the lengthened period." *School Review.* 32:694-706. November, 1924.

Describes the general plan of supervised study as it has been worked out in the Janesville, Wisconsin, junior and senior high schools. States that a class period of sixty minutes may be approximately divided as follows: twenty minutes for review, fifteen minutes for the assignment, twenty-five minutes for working out the chief difficulties of the assignment.

BROWN, W. W. AND WORTHINGTON, J. E. "Supervised study in Wisconsin high schools." *School Review.* 32:603-612. October, 1924.

Outcomes of an investigation of supervised study in seven Wisconsin high schools. Objective data indicate a superiority for this type of instruction. Five tables included.

BURR, A. W. "How is supervised study doing?" *School Review.* 32: 224-226. March, 1924.

A frank statement of conditions as found in many schools in many states. The question is raised whether or not supervised study as at present administered in most schools should be allowed to continue.

BURTON, W. H. "The supervision of study." (In his *Supervision and the Improvement of Teaching.* New York, D. Appleton and Company, 1922. pp. 187-211.)

A general discussion of the problem. Good bibliographical notes are appended to the chapter.

CARTER, R. E. "Teaching a study-habit." *School Review.* 29:695-706; 761-775. November and December, 1921.

Formulates and illustrates by concrete examples some of the important steps in teaching any given study-habit.

CLINE, E. E. "Directing learning." *Education.* 45:193-202. December, 1924.

A philosophy of directed learning is offered followed by an outline of suggestive procedure. The various classroom activities that may function in such a process are cited and a rating list is proposed for checking the actual working of the scheme.

COLVIN, S. S. "Supervised study." (In his *Introduction to High-School Teaching.* New York, The Macmillan Company, 1924. pp. 360-381.)

The chapter treats of the following phases of the subject: (1) reasons for supervised study, (2) objections to it, (3) forms of it, (4) purposes for which the period may be used, (5) fundamental principles to be emphasized in the technique of learning, and (6) indirect results.

CUBBERLEY, E. P. *The Principal and His School.* Boston, Houghton Mifflin Company, 1923. pp. 403-410.

Advice is given as to how to organize a school for directed study, together with some of the required technique.

DAY, G. A. "Supervision of study in the grades." (In National Education Association. *Addresses and Proceedings, 1919.* pp. 598-600.)

States tentative conclusions based on four years of experimentation in elementary classrooms.

DEARBORN, G. V. *How to Learn Easily.* Boston, Little, Brown, and Company, 1916. 227 pp.

The subtitle "Practical hints on economical study" explains the nature of the book quite exactly.

DOWELL, E. S. "The attainment of good work habits in the lengthened period." *Ohio Teacher.* 43:154-157. December, 1922.

Points out the importance of directed study. Discusses the qualities that should be developed in the learner and the agencies that can be used to attain this end. Believes that the instructor is the determining factor in success or failure, although technique is not to be ignored.

DOWELL, E. S. "The use of directed study in the courses in social science in Bucyrus high school." *Ohio Educational Monthly.* 73:1-8. January, 1924.

A comprehensive discussion of the nature of directed study and of the organization of the school for it.

DUNN, G. A. "The value of supervised study." *Teachers College Record.* 18:430-437. November, 1917.

To find out the relative merits of directed and undirected study, an experiment was made in the fourth grade of the public schools of a town system near New York City. Results favored directed study.

EDINGTON, C. O. "The supervised-study project." *Educational Research Bulletin, Ohio State University.* 2:235-236. October 3, 1923.

A preliminary report on the results of a project in supervised study conducted in eight schools in Ohio.

EDWARDS, A. S. "Directed study." *South Carolina Education.* 5:16-17. May 15, 1924.

An address before the Department of Grammar Grade Teachers of the South Carolina Teachers Association on the general importance of directed study, together with a suggested procedure for the teacher in the classroom.

FARNHAM, C. E. "Supervised study." *Education.* 40:171-176. November, 1919.

Discusses the theory and practice of supervised study.

FORDYCE, CHARLES. "Supervised study." *Nebraska Teacher.* 20:209-210. January, 1918.

Results of two studies show that there is sufficient time to include supervised study in school.

FOSTER, H. H. "Study as self-teaching." (In his *Principles of Teaching in Secondary Education.* New York, Charles Scribner's Sons, 1921. pp. 222-246.)

Discusses the study problem in general, with some particular remarks on the meaning and administration of supervised study. Supplementary readings appended.

FRANKS, T. H. "Supervised study in junior high school." *High School Journal.* 5:121-122. May, 1922.

In the Smithfield, North Carolina, Junior High School, supervised study was a great aid in reducing failures. Describes the procedure adopted.

GIST, A. S. "Habits of study." (In National Education Association. Department of Elementary School Principals. *Third Yearbook.* pp. 254-264. Bulletin, Vol. 3, No. 4. July, 1924.)

Study of conditions at the B. F. Day School, Seattle, Washington, relative to what are some of the desirable habits of study, how pupils do study when unsupervised, and how their habits may be improved.

GOODALL, M. B. "Supervised study and individual differences in English." *The High School, Eugene, Ore.* 2:3-5. December, 1924.

An interesting description of a type of supervised study which aided in the instruction of seventh-grade pupils of great variation in ability.

HALL-QUEST, A. L. "The direction of study as the chief aim of the high school." (In Johnston, C. H. ed. *The Modern High School.* New York, Charles Scribner's Sons, 1916. pp. 265-294.)

A general discussion of the theory and practice of the technique of study.

HALL-QUEST, A. L. "Present tendencies in supervised study." *Educational Administration and Supervision.* 1:239-256. April, 1915.

Ascertained what the tendencies were in 1915 by carefully examining all available literature and by means of a postal card questionnaire answered by 532 schools.

HALL-QUEST, A. L. *Supervised Study: a Discussion of the Study Lesson in High School.* New York, The Macmillan Company, 1916. 433 pp.

Gives an excellent summary of the historical aspects of supervised study and of different theories and experiments concerning it. Part 2 of the book discusses how to supervise the study of various high-school subjects.

HALL-QUEST, A. L. "Supervised study as a preparation for citizenship." *Journal of Education.* 91:3-6. January 1, 1920.

Describes how the schools through this type of instruction may train youth in how to study the problems of living. Considerable attention is paid to the organization best adapted for such training.

HALL-QUEST, A. L. *Supervised Study in the Elementary School.* New York, The Macmillan Company, 1924. 473 pp.

The most recent contribution of the champion of supervised study. Part 1 is an exposition of the general principles of administration and supervision, Part 2 shows how supervised study may be conducted in the various elementary subjects. Several chapters have bibliographies appended.

HALL-QUEST, A. L. "Supervised study in the grades." (In National Education Association. *Addresses and Proceedings, 1920.* pp. 502-504); also in *American Education.* 23:396-401. May, 1920.

A daily schedule based on the principles of the learning process, and a lengthened class period arranged for on the weekly instead of the daily basis will remove administrative obstacles. The factors of study which should be taught pupils are listed.

HALL-QUEST, A. L. "Supervised study, the new administrative vision." *American School Board Journal.* 58:25-27. February, 1919.

The individual pupil's study life which is the core of his learning power must be made to function at its highest capacity. Types of supervised study explained and illustrated.

HALL-QUEST, A. L. "Teaching by supervision." *Schoolmen's Week Proceedings.* Philadelphia, The Press of the University of Pennsylvania, 1918. pp. 239-245. (University of Pennsylvania Bulletin. Vol. 18, No. 5. June, 1918.)

A description of supervised study as a type of the laboratory method of study. Its technique is ably discussed.

HALL-QUEST, A. L. "The training of teachers to supervise study." *Educational Administration and Supervision.* 7:160-165. March, 1921.

A description of the method employed by the University of Cincinnati to provide this training.

HANDSCHIN, C. H. "Individual differences and supervised study." (In his *Methods of Teaching Modern Languages*. Yonkers-on-Hudson, N. Y., World Book Company, 1923. pp. 261-285.) Briefer account in *Modern Language Journal*. 3:158-173. January, 1919.

Summarizes the various methods which have been employed in modern language teaching in adapting work to suit individual differences. Enlarges upon supervised study as the best method.

HANES, ERNEST. "Supervised study in English." *School Review*. 32:356-363. May, 1924.

Describes the procedure in supervised study in each of the three types of activity within the English Department of the University High School of the University of Chicago.

HANSEN, E. L. E. "How to find time for supervised study in a rural school." *Wisconsin Journal of Education*. 57:4-6. September, 1924.

The day's work is so planned that one of the classes in each quarter of the day does work under special instruction but without supervision. This gives fifteen minutes for supervised study in whichever class in that quarter of the day needs it. The period before school opens is also utilized for this purpose.

HECKERT, J. W. "The effects of supervised study in English composition." *Journal of Educational Research*. 5:368-380. May, 1922.

An investigation conducted with the ninth grade of the William McGuffey High School at Miami University. Conclusions reached were that supervised study is eminently worth while if teachers are able to direct children's efforts intelligently and if they know intimately the most successful methods of procedure.

HICKLE, CAREY. "Supervised study and individual opportunity." *Porto Rico School Review*. 2:25-28. April, 1918; 2:27-32. May, 1918; 3:25-35. May, 1919.

Believes that supervised study is the method to be used in individualizing instruction. Urges flexibility of promotion and advancement by subject.

HICKSON, D. M. "Supervised study and rotating periods." *Ohio Teacher*. 44:9-11. September, 1923; also in *Ohio Educational Monthly*. 72:255-260. October, 1923; and in *Educational Research Bulletin, Ohio State University*. 2:320-323. November 28, 1923.

Describes the system as it operates in the Lancaster, Ohio, High School.

High School Masters' Club of Massachusetts. *Supervised Study and the Longer School Day.* Boston, Massachusetts State Board of Education, 1918. 40 pp. (The Commonwealth of Massachusetts Bulletin of the Board of Education, 1918. No. 3. Whole No. 94.)

Conclusions of a committee appointed to report on the extent to which supervised study had been adopted in the United States and the length of the school day in typical high schools. The data are valuable.

HUGHES, W. H. "Standardizing procedure in combination system of supervised study, varying scope of work, and weighted credit." *Journal of Educational Research.* 2:547-556. September, 1920.

Sets forth some of the methods employed in the Riverview Union High School, Antioch, California, in administering this combination plan. Teachers and student body are stated to be enthusiastic over the plan and its possibilities.

JOHNSON, F. W. "Supervised study." *Proceedings of the High School Conference.* Urbana, Ill., University of Illinois, 1914. pp. 78-84. (University of Illinois. College of Education Bulletin, No. 13.)

Gives experimental data and definite conclusions.

JOHNSTON, C. H. AND OTHERS. "Supervised study." (In their *Junior-Senior High-School Administration.* New York, Charles Scribner's Sons, 1922, pp. 201-217.)

A general treatment of the subject.

JOHNSTON, W. H. "Supervised study in the high school and the seventh and eighth grades." *Chicago Schools Journal.* 6:325-328. May, 1924.

Outlines very clearly a procedure which could well be followed in teaching the technique of a specific study-habit.

JUDD, C. H. "Teaching students to study." (In his *Psychology of High-School Subjects.* Boston, Ginn and Company, 1915. pp. 436-472.)

Excellent discussion about how to study and how to organize intellectual material. Emphasizes the fact that it is more important to train the strong student than the weak or mediocre student.

KELLY, D. J. "Administrative problems in supervised study." (In National Education Association. *Addresses and Proceedings, 1919.* pp. 601-602.)

Discusses how to organize and install a practicable scheme for the supervision of study.

KITSON, H. D. *How to Use Your Mind.* 2d ed. Philadelphia, J. B. Lippincott Company, 1921. 253 pp.

Systematizes and puts in available form methods of study which may be imparted by instruction.

KORNHAUSER, A. W. *How to Study.* Chicago, The University of Chicago Press, 1924. 44 pp.

A manual containing suggestions for students on the technique of study and helpful guidance in the formation of good study habits.

LAPPIN, J. C. "Supervised study." *Ohio Educational Monthly.* 68:3-7, 46-50. January and February, 1919.

Reviews different plans which are in use. Contains good advice for the teacher.

LEWERENZ, AMANDA. "A half year's trial of supervised study." *Proceedings of the High School Conference.* Urbana, Ill., University of Illinois, 1917. pp. 274-277. (University of Illinois Bulletin. Vol. 15, No. 15. December 10, 1917. School of Education Bulletin, No. 19.)

Describes the Maine, Illinois, method of supervised study. Gives a detailed account of the results of such study in a first-year German class.

MCGREGOR, A. L. *Supervised Study in English.* New York, The Macmillan Company, 1921. 220 pp.

Devoted to the special technique necessary for supervised study in English. Planned primarily for junior-high-school classes where the lengthened period of sixty, seventy, or eighty minutes prevails. The type lessons included illustrate concretely the application of the method.

MARTIN, A. S. "A high-school day of six hours and directed study." *American School Board Journal.* 53:23, 71-72. October, 1916.

An account of the experiment at Norristown, Pennsylvania.

MASON, W. L. "A new system of supervised study." *Education.* 38: 117-120. October, 1917.

Describes very briefly the different systems in vogue and points out some of the striking results following their introduction.

MASON, W. R. "Supervised study for vocational students." *Industrial Arts Magazine.* 9:404-405. October, 1920.

The Altoona, Pennsylvania, High School divides the class period for vocational courses as follows: five minutes for review, fifteen minutes for recitation, and twenty minutes for studying the assignment.

MILLER, H. L. *Directing Study.* New York, Charles Scribner's Sons 1922. 377 pp.

Presents various illustrative procedures, provides a theory and a plan of organization of classroom work, indicates ways of dealing with individuals of varying achievements in the same group, suggests shifts from the traditionally assigned lesson to directed and controlled classroom activity (study), moves steadily from classified groups to individual activity and the coöperating spirit, and proposes that pupils be taught by being given things to do. An excellent book.

MILLER, H. L. AND JOHNSTON, DOROTHY. "Directing study for mastery." *School Review.* 30:777-786. December, 1922.

While the article is primarily concerned with presenting a procedure by means of which students may gain a sense of mastery of subject matter, it also suggests helpful ways of dealing with individuals of varying achievements in the same class group.

MINOR, RUBY, "Supervised study in the elementary school." *School and Home Education.* 39:168-170. March, 1920.

Excellent brief discussion of the main points at issue.

MINOR, RUBY. "Supervising the study period." (In her *Principles of Teaching Practically Applied.* Boston, Houghton Mifflin Company, 1924. pp. 147-162.)

A general discussion of the importance and need of supervised study in the elementary grades. Its organization is considered.

MITCHELL, HOWARD. "Supervised study in modern languages." *Education.* 38:385-387. January, 1918.

Practical suggestions as to how supervised study may be used advantageously in modern language teaching.

MONROE, W. S. and MOHLMAN, D. K. *Training in the Technique of Study.* Urbana, Ill., University of Illinois, 1924. 66 pp. (University of Illinois Bulletin. Vol. 22, No. 2. September 8, 1924. Bureau of Educational Research, College of Education. Bulletin No. 20.)

A description of the procedure employed in investigating the study habits of high-school students. Directions and exercises for giving training in study habits and an annotated bibliography add to the usefulness of the bulletin.

MOORE, J. G. "Supervised study." *Proceedings of the High School Conference.* Urbana, Ill., University of Illinois, 1914, pp. 72-78. (University of Illinois. School of Education Bulletin, No. 13.)

An account of three experiments in supervised study in three different cities.

MORRIS, F. A. "Some experiments in supervised study." *American School Board Journal.* 55:31. November, 1917.

An account of three different methods of conducting supervised study in the Foxcroft, Maine, school system. The individual pupil was better cared for without additional cost.

MORRISON, H. C. "Supervised study." *School Review.* 31:588-603. October, 1923.

Excellent discussion of the theory and practice of supervised study.

NIELSON, C. H. "An innovation in supervised study." *School Review.* 25:220. March, 1917.

The two chief features of this scheme are to aid pupils who are falling behind in their work and to teach classes how to study, by setting aside one of the seven daily periods as a "deficiency period" and by adding one period more to the school day.

NUTT, H. W. "Supervised study." (In his *Supervision of Instruction.* Boston, Houghton Mifflin Company, 1920. pp. 181-192.)

Brief statement of the essentials. Contains outlines suggestive of the technique to be practiced in group study, in individual study conferences, and in make-up work.

NUTT, H. W. "Supervision of the study habits of high-school pupils." (In his *Principles of Teaching High-School Pupils.* New York, The Century Company, 1922. pp. 295-323.)

A good general discussion of the principles and practices involved in the guidance of the learning efforts of pupils.

PARKER, S. C. "Supervised study." (In his *Methods of Teaching in High Schools.* Boston, Ginn and Company, 115, pp. 301-417.)

A good statement of the practices of supervised study. Consult also the author's *Exercises*, pp. E203-215.

PERMAN, A. A. "Adventures in supervised study." *Journal of Education.* 98:490-492. November 15, 1923.

A general description of the status of supervised study in several high schools. The school organization providing for this type of instruction is explained.

PHILLIPS, E. D. "Supervised study." *American School Board Journal.* 62:39. April, 1921.

Defines supervised study as teaching how to study, properly assigning the lesson, and then supervising the work of each pupil as he attempts to master the assignment at his seat. Lists its advantages and disadvantages. Summarizes the different plans in operation and evaluates the results.

PHILIPS, H. S. "Report of a committee on junior high schools, Denver, Colorado." *Elementary School Journal.* 23:13-24. September, 1922.

Results of a questionnaire study concerning the school day, supervised study, and advisory periods, procedure, etc., answered by sixty-three school systems. Data secured from Denver teachers also recorded. There are nine tables.

PICKELL, F. G. "Supervised study in the Lincoln high school." *Nebraska Teacher.* 21: 16-18. September, 1918.

After a study of the systems used in about forty cities, a plan was adopted which involved a school day of four eighty-minute periods, one of which is a "shifting" period on four days each week. Other items of organization and administration are described.

PIEPER, C. J. "Supervised study in natural science." *School Review.* 32:122-133. February, 1924.

Describes the procedure in the University High School of the University of Chicago. States clearly what is being done under the pre-test, pre-view, assimilation, organization, and final recitation phases of the work. Tables and illustrations included.

PORTER, H. V. "Supervised study in biology." *Proceedings of the High School Conference.* Urbana, Ill., University of Illinois, 1923. pp. 103-107. (University of Illinois Bulletin. Vol. 21, No. 25. February 18, 1924.)

An interesting discussion of the differences between two classes in biology, the one having a laboratory period every day and doing all of its studying and reciting in class, the other having the traditional two double periods a week. Supervised study now prevails in all the science work and in one-third of the classes in other subjects in the Athens, Illinois, High School.

REAVIS, W. C. "The administration of supervised study." *School Review.* 32:413-419. June, 1924.

Discusses the usual plans of administration, points out their deficiencies and suggests the procedure of the University High School of the University of Chicago as more nearly supplying the ideal conditions for this type of instruction.

ROREM, S. O. "Supervised study as a school project." *Junior High Clearing House.* 1:23-34. April, 1920.

Supervised study is of special value in the junior high school. Suggests what should be done and how it should be done.

ROSS, CARMON. "The problem of supervised study in the grades." *Pennsylvania School Journal.* 67:474-480. April, 1919; also in *Education.* 39:457-470. April, 1919.

Considers these three phases of supervised study: (1) what it is; (2) its advantages and objections; and (3) problems of introducing it into the grades.

SAMPSON, C. H. "Supervised study." *American School Board Journal.* 65:70, 72. July, 1922.

Explains that supervised study is a "leading-on" process which is especially helpful for pupils with individual problems.

SANDWICK, R. L. *How to Study and What to Study.* New York, D. C. Heath and Company, 1915. 170 pp.

Discusses the principles of study. Students will find the last half of the book of special help.

SEXTON, J. W. "Training teachers to supervise." (In National Education Association. *Addresses and Proceedings, 1919.* pp. 602-606.)

The first and most important step is to gain from the teachers a sympathetic attitude toward the supervision of study. Suggests the necessary procedure to gain this end. Then the technique of supervised study must be mastered.

SIMPSON, M. E. *Supervised Study in American History.* New York, The Macmillan Company, 1921. 278 pp.

Describes in detail just how the author actually used this method in teaching history. The principles involved become very apparent in the various lesson illustrations which are offered.

SMITH, R. R. "Supervised study in the Joliet Township High School." *American School Board Journal.* 58:33, 80. March, 1919.

Describes the Joliet double period plan of supervised study. Recommends that the first period be used for study, the second for recitation. Total time is seventy minutes.

SNOW, W. B. "Supervised study." *Boston Teachers News Letter.* 12: 14-18. February, 1924.

Describes certain plans of organization which make a supervised study period possible and points out the special value of the Boston High School system.

STETSON, P. C. "A survey of supervised study." *American School Board Journal.* 54:19-20, 85-86. June, 1917.

A summary of some of the notable experiments which have been made. Results seem to justify its use in meeting individual differences.

STORMZAND, M. J. "Study and supervised study." (In his *Progressive Methods of Teaching*. Boston, Houghton Mifflin Company, 1924. pp 88-139.)

A general treatment of the meaning and forms of study followed by a helpful discussion of supervised study.

STRAYER, G. D. and NORSWORTHY, NAOMI. "How to study." (In their *How to Teach*. New York, The Macmillan Company, 1922. pp. 220-233.)

Excellent discussion of the various types of study.

SUMNER, S. C. *Supervised Study in Mathematics and Science*. New York, The Macmillan Company, 1922. 241 pp.

Discusses the special methods needed in the teaching of mathematics and science. Contains also many suggestions and helpful type lessons.

"Supervised language study." *Proceedings of the High School Conference*. Urbana, Ill., University of Illinois, 1915. pp. 296-301. (University of Illinois. College of Education Bulletin, No. 15.)

Report of the results of the Committee of the Modern Language Section. The study is based on a questionnaire.

THOMAS, F. W. *Training for Effective Study*. Boston, Houghton Mifflin Company, 1922. 251 pp.

Since the study period is as important a factor in a child's education as the recitation period, equal attention should be given them. Chapters V, VI, and VII are especially helpful for supervised study.

WAPLES, DOUGLAS. "The study-recitation." (In his *Procedures in High-School Teaching*. New York, The Macmillan Company, 1924. pp. 120-137.)

Defines this type of procedure and considers these questions: "Can the conventional recitation procedure give satisfactory results? Can pupils study effectively in class? How can the teacher apportion his time between the individual and the group?" and "What are the chief difficulties to be expected in adopting this procedure?"

WHIPPLE, G. M. *How to Study Effectively*. Bloomington, Ill., Public School Publishing Company, 1916. 44 pp.

A set of thirty-eight rules on the technique of studying with just sufficient explanatory comment to make them readily intelligible and serviceable.

WHITE, E. A. "An experiment in supervised study." *Educational Administration and Supervision*. 1:257-262. April, 1915.

Describes the system of supervised study as it operates in the Kansas City, Kansas, High School. The schedule of classes, 1914 and 1915, is included.

WILEY, J. A. *Practice Exercises in Supervised Study and Assimilative Reading: a Guide for Directing the Information of Efficient Study Habits.* Cedar Falls, Iowa, The Author, 1922. 112 pp.

This manual "outlines a technique in teaching pupils to study any subject which involves the use of textbook material."

WILSON, H. B. *Training Pupils to Study.* Baltimore, Warwick and York, 1917. 70 pp.; also in *Atlantic Educational Journal.* 12:419-427, 475-481. April and May, 1917.

Analytical presentation of ten factors in study, with definite applications to lessons. Very practical and detailed lesson plans, which are the complete reports of work actually done.

YOUNG, ELLA and SIMPSON, M. R. "A technique for the lengthened period." *School Review.* 30:199-204. March, 1922.

An excellent discussion of the sixty-two minute period as used in the Bucyrus, Ohio, High School.

Part IV. Differentiated Curricula and Courses of Study[5]

"Helpful books on elementary and secondary school curricula." *Research Bulletin of the National Education Association.* 1:338-343. November, 1923.

A list of 58 "best" books selected on the judgment of 25 educators. Although these books are chiefly concerned with the problem of building courses of study and curricula, they recognize the basic principle of individual differences and take cognizance of them. Several books devote a chapter or more to discussing this differentiation in detail. The selected and annotated bibliography following the list is valuable. None of its titles is repeated here.

Henry, T. S. "Annotated bibliography on gifted children and their education." *Twenty-Third Yearbook of this Society.* Bloomington, Ill., Public School Publishing Company, 1924. Part I, pp. 389-443.

An excellent bibliography of over 450 titles covering quite thoroughly the education of gifted children. Many of its entries will discuss the enriched curriculum and course of study as the best provision which the school can make for the superior child. The following list does not duplicate its titles.

Alltucker, M. M. "Building the curriculum." *Journal of the National Education Association.* 13:67-68. February, 1924.

One of the factors involved is the measurement or estimation of each child's physical, social, moral, and mental worth and the subsequent adaptation of the courses of study to meet the needs of different groups of children.

Anthony, K. M. "Adapting school procedure to individual differences in children." *Virginia Journal of Education.* 14:43-45. October, 1920.

Standard group intelligence tests and educational tests will assist the teacher in acquiring a working estimate of her pupils. This procedure should be followed by a reorganization of her course of study with the "sliding assignment."

Ayres, L. P. "Differentiation in courses of study." *Journal of Education.* 79:317-318. March 19, 1914.

"Great difference in inherent ability of children. Must differentiate our courses because our children are differentiated by nature. Comparison of ability of best in lower grades with poorest in upper grades."

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[5]The bibliography here does not cite any of the 58 "best books" mentioned in the first reference nor any of the more than 450 titles listed by Henry in the second reference in Part IV.

BAGLEY, W. C. "Differentiated curriculum *versus* common elements." *School and Home Education.* 35:215-218. March, 1916; also in National Education Association. *Addresses and Proceedings, 1916.* pp. 958-965.

"Carefully selected, rigorously tested common elements should form the core of every seventh- and eighth-grade program. Around these should be built the differentiations, the diversified offerings, but no one should be permitted to escape the common elements."

BAGLEY, W. C. "Principles justifying common elements in the school program." *Proceedings of the High School Conference.* Urbana, Ill., University of Illinois, 1914. pp. 9-21. (University of Illinois. School of Education Bulletin, No. 13.)

While the author justifies differentiated curricula, he believes that it has sometimes been practiced to excess. Shows that a certain measure of uniformity is essential, that it furnishes one rather definite standard for selecting common elements, and does not unduly interfere with desirable differentiation.

BOBBITT, FRANKLIN. "Differentiation of courses." (In his *What the Schools Teach and Might Teach.* Cleveland, Ohio, The Survey Committee of the Cleveland Foundation, 1915. pp. 98-100.)

Describes what differentiation of courses was to be found in the Cleveland schools at the time the survey was made.

BROOKS, E. C. "The need of a new educational content." *Journal of Education.* 79:512-513. May 7, 1914.

BURK, FREDERIC. "Our high-school curriculum: what shall we do about it?" *Western Journal of Education.* 18:3-6. May 19, 1912.

"A discussion of the high-school curriculum based on results of an entrance examination for the San Francisco State Normal School."

BYE, E. C. "A composite course in social science." *Historical Outlook.* 14:145-147. April, 1923.

A description of the course in the Coatesville, Pennsylvania, High School. It is comprehensive and flexible so that it may meet the needs of pupils who expect to go to college and those who do not.

CLARK, M. G. "What may and must we add to the conventional course of study by way of differentiation?" (In Iowa State Teachers Association. *Proceedings, 1916.* pp. 104-109.)

Asserts that the "common pabulum" must be more than minimal essentials. Discusses several types of enriching possibilities.

CLEMENT, J. A. "The business of scientific curriculum-making in secondary education." *Educational Administration and Supervision.* 9:357-366. September, 1923; also in *School Science and Mathematics.* 24:121-130. February, 1924.

Discusses the four factors involved in reconstructed secondary education, one factor being the adaptation of subject matter to individual differences.

COFFMAN, L. D. "Differentiated curriculums *versus* common elements." *School and Home Education.* 35:213-215. March, 1916; also in *American School.* 2:264-266. September, 1916; and in National Education Association. *Addresses and Proceedings, 1916.* pp. 953-958.

Believes that too much attention has been paid to differences in individuals and not enough to their likenesses. Advocates an enriched and socialized curriculum which retains the common elements as its core.

COLLINS, J. V. "Adaptation." *Educational Review.* 51:286-294. March, 1916.

Outlines a system by which students may be adapted to courses as well as courses to students.

COUNTS, G. S. "Parental occupation and the course of study." (In his *Selective Character of American Secondary Education.* Chicago, University of Chicago, 1922. pp. 55-73. Supplementary Educational Monographs, No. 19.)

A study showing how children coming from various occupational groups reacted to the different curricula which were offered in the high schools of four cities.

COXE, W. W. "School variation in general intelligence." *Journal of Educational Research.* 4:187-194. October, 1921.

A study which revealed the differences in the general intelligence of the pupils in 24 sixth grades in 24 elementary schools in Cincinnati, Ohio, and also showed the extent to which schools themselves differ in the type of their pupils. Compares these facts with the type of community served and concludes that courses of study and curricula should be adjusted to meet varying conditions.

"Curriculum brings teachers big job." *School Bulletin, Kansas City, Kansas.* 2:1. February, 1924.

Proposes to build a course of study which will take into account the individual differences of pupils by outlining courses of study for groups of high, medium, and low levels of intelligence.

DICKSON, V. E. "Differentiation of courses to meet needs of pupils of different levels of ability." (In National Education Association. Department of Superintendence. *Second Yearbook*. Washington, The Association, 1924. pp. 201-206.)

In the Oakland, California, public schools the following plan is being developed: the segregation of pupils into ability groups, the differentiation in content of course, standards of attainment, and, wherever necessary, in methods of instruction.

"Differentiation of the curriculum to meet individual needs of pupils." (In National Education Association. Department of Superintendence. *Second Yearbook*. Washington, The Association, 1924. pp. 193-200.)

A symposium by some of the leading educators in the United States as to the provision which is made in their school systems for curricula differentiation.

DOWNER, JOHN. "The curriculum." *School Index*. 10:270-271. May 2, 1924.

In a general discussion of the principles and factors governing the selection and organization of curriculum material, the author points out the importance of adapting this material to the differences in children. He illustrates by citing, as examples, the Dalton and Winnetka plans.

ELSON, W. H. and BACHMAN, F. P. "Different courses for elementary schools." *Educational Review*. 39:357-364. April, 1910.

The elementary school should provide different courses of study, adapted to the needs of varying districts and of particular groups of children. The plan is described.

ELSON, W. H. and BACHMAN, F. P. "Need of different elementary school courses." *Elementary School Teacher*. 10:202-203. December, 1909.

Describes three ways of providing dual work in the elementary school. These courses are for children who intend to continue their schooling and for those who expect to attend no other school.

FELTER, W. L. "On reconstructing the curriculum in secondary schools." *Educational Review*. 48:37-48. June, 1914.

Would include courses of study which reflect the activities found in society, industrial and commercial. Advocates separate courses for boys and girls, flexible curricula, shorter courses, and more types of high schools.

FRANCIS W. PARKER SCHOOL OF CHICAGO. *The Individual and the Curriculum*. Chicago, Francis W. Parker School, 1920. 158 pp. (Studies in Education, Vol. 6.)

Realizing the need of new materials for the curriculum, the faculty of this school published this study which contains a number of interesting experiments on the adaptation of the curriculum to the individual. The methods and materials used are within the scope of the average classroom.

FRAZIER, C. R. "Should elementary school work be differentiated to meet individual, social, and industrial needs, and how, and what ways and means are available for fitting school work to those needs satisfactorily?" (In Washington Educational Association. *Proceedings, 1916.* pp. 68-74.)

GAMBRILL, J. M. "Experimental curriculum-making in the social studies." *Historical Outlook.* 14:384-406. December, 1923; 15: 37-55. January, 1924.

In this report of an extended investigation of the leading experimental schools, considerable data will be found on the adjustments which are being made for individual differences of pupils.

GLASS, J. M. *Curriculum Practices in the Junior High School and Grades V and VI.* Chicago, The University of Chicago, 1924. 181 pp. (Supplementary Educational Monographs, No. 25. November, 1924.)

The results of an investigation of the curriculum practices in fourteen municipal school systems. The core curriculum, elective courses, and subject divisions of the constants are carefully considered. Contains many excellent tables.

GLASS, J. M. "Status of the junior-high-school differentiation of curricula." *Seventh Yearbook of the National Association of Secondary-School Principals.* Cicero, Ill. The Association, 1923. pp. 34-40.

The junior-high-school program of studies has been designated as a "constants-with-variables curricula" as best defining the plan of constants and electives which generally prevails. There is a shift of emphasis, however, from differentiation to guided exploration as preparatory to secondary education.

GRADY, W. E. "Curriculum-making." *Psychological Clinic.* 7:57-67. May, 1913.

In regard to the revision of the New York City courses of study, suggests that varied minimal courses be outlined and tried in different parts of the city to which they are best adapted. Variations should also be allowed for the differences in ability, length of school career, etc., within the group of pupils.

HAILMAN, W. N. "Adjustment of the common-school curriculum to the vocational needs of to-day." *Manual Training and Vocational Education.* 16:129-137. November, 1914.

Discusses the importance of stressing the concrete and practical phases of subjects and of encouraging productive and creative work. This will necessitate greater curriculum differentiation.

HEETER, S. L. "Differentiation in the courses of study for children between twelve and sixteen years of age." (In National Education Association. *Addresses and Proceedings, 1913.* pp. 292-296.)

An account of the differentiation which was made in the Pittsburgh, Pennsylvania, schools in one year. It is a statement of administrative experience.

HIGGINS, E. E. "Suggestions for enriching the content subjects." *Detroit Journal of Education.* 3:166-169. December, 1922.

Describes the enlarged program which was used with the accelerated pupils in the fifth and sixth grades of the Jackson, Michigan, schools.

HOLLEY, C. E. "Curriculum differentiation and administration in typical high schools." *Educational Administration and Supervision.* 1:332-340. May, 1915.

A study based on data secured from the bulletins of 54 high schools located in cities of four thousand or more inhabitants and printed between the years 1912 and 1914.

HOLLISTER, H. A. "Constants and variables in the high-school programme of studies." *Education.* 32:69-74. October, 1911.

Believes that the time has come when variables should be seriously considered in the organization of programs. Their place and time should be appointed with care.

HORN, J. L. "The curriculum as an elementary-school problem" and "Psychological aspects of curriculum formulation." (In his *The American Elementary School.* New York, The Century Company, 1923. pp. 297-352.)

Believes that educational processes should conform to the differentiation which is found in children, this differentiation being provided for from the beginning of their school life. The formulated curriculum goals should also be conditioned by "psychological factors such as maturity, intelligence, emotion, and, in addition, variability in every distinguishable characteristic."

JENSEN, G. C. "The Eureka plan." *Sierra Educational News.* 20: 687-689. December, 1924.

A description of the plan which advocates the differentiation of four purpose groups: (1) the university group, (2) the high-school graduation group, (3) the special certificate group—those who do not graduate, and (4) the part-time group.

JOHNSON, M. H. "Modifications of the curriculum that have been tried." *Bulletin of the New York Society for the Experimental Study of Education.* 4:3. February, 1923.

Cites the various opportunities which the Washington Irving High School of New York City offers girls of different abilities.

JOHNSTON, C. H. "Curriculum adjustment in modern high schools." *School Review.* 22:577-590. November, 1914.

Urges curriculum differentiation wherever possible, the basis for which must be the demands of the different groups of pupils; these groups are to be chosen on grounds of different vocational needs and expectations.

JOHNSTON, C. H. "What is curriculum differentiation?" *Educational Administration and Supervision.* 2:49-57. January, 1916.

Attempts to clear up the confusion which exists relative to the terminology used in connection with the term "curriculum differentiation."

JUDD, C. H. "Problems exhibited by non-promotions." (In his *Measuring the Work of the Public Schools.* Cleveland, Ohio, The Survey Committee of the Cleveland Foundation, 1916. pp. 17-44.)

The fact that there were ten thousand non-promoted pupils in the Cleveland elementary schools in June, 1914, indicates that there is something wrong with the school administration. Urges that there be an extended revision of the course of study.

KELLER, P. G. W. "Rebuilding a course of study." *School Review.* 32:49-52. January, 1924.

An account of how the course of study for the Waukegan, Illinois, Township Secondary Schools was rebuilt. Illustrates the teaching unit in mathematics in which there is proper adjustment for each pupil.

KIRBY, BYRON. "The curriculum." *Educator-Journal.* 21:203-206. December, 1920.

"Some suggestions for changing the course of study beginning with the sixth grade so that the school systems would provide for a gradual divergence in the courses followed, dependent upon the different abilities and different tastes of the children themselves."

LEWIS, W. D. "The high school and the boy." *Saturday Evening Post.* 184:8-9, 88-98. April, 1912.

"In order to meet the needs of all classes of boys, all subjects of study should be placed on an equality, and the content of the courses in each of these lines, and the aims and the methods of instruction should be determined by the capacity of the student as they are and by social and economic needs, rather than by the foundation required for advanced courses or by professional theories as to the complete and logical organization of subject."

McManis, J. T. "Individual differences in the early grades." *School and Society.* 3:289-295. February 26, 1916.

Pleads that a flexible curriculum be allowed for the lower as well as the higher grades in order that the individual differences of pupils may be provided for. Suggests practical solutions for this problem.

McMurry, F. M. "The uniform minimum curriculum with uniform examinations." (In National Education Association. *Addresses and Proceedings, 1913.* pp. 131-148.)

Criticizes pointedly the proposed New York State plan. Believes that the freedom and initiative of the teacher and the individuality of the pupil should be preserved.

Marsh, C. L. "Curriculum objectives and the adaptation of courses of study to individual differences: enrichment or acceleration." *Proceedings of the Third Annual Ohio State Educational Conference.* Columbus, Ohio, The Ohio State University, 1923. pp. 388-391. (The Ohio State University Bulletin. Vol. 28, No. 2. August 31, 1923.)

Argues that a highly differentiated curricula is the only way to reach every adolescent child. Suggests four divisions of the program of studies—academic, scientific, commercial, and industrial—and recommends grouping of pupils according to ability.

Miller, H. L. "The broader curriculum of the new secondary school." *Seventh Yearbook of the National Association of Secondary-School Principals.* Cicero, Ill., The Association, 1923. pp. 136-144.

Maintains that both education and vocation can be met by a curriculum of six cores considered as constants. Each pupil should be required to choose two units in each of these six fields. Believes that it is neither desirable nor feasible to have differentiated curricula.

Mitchell, David. "Children's ability and educational opportunities." (In Bell, J. C. ed. *Contributions to Education.* Yonkers-on-Hudson, N. Y., World Book Company, 1924. Vol. 1, pp. 5-16.)

An excellent discussion of the progress of pupils through the grades, with emphasis on the differences in the ability of pupils and the methods which schools have used and should use to meet these differences. Adjusting curricula and courses of study has many possibilities.

MITCHELL, S. C. "For the 90 percent." *School Review*. 31:439-444. June, 1923.

A plea for curricula which will prepare for vocations as well as for college. Strongly advocates vocational training by correspondence in conjunction with high-school training.

MORRISON, H. C. "Reconstructed mathematics in the high school: the adaptation of instruction to the needs, interests, and capacities of students." *Thirteenth Yearbook of this Society*. Chicago, University of Chicago Press, 1914. Part I, pp. -31.

Mathematical courses should be differentiated for cultural and technical purposes, should parallel broad zones of adult activity, and should make special provision for brilliant students.

NEWLON, J. H. "The need of a scientific curriculum policy for junior and senior high schools." *Educational Administration and Supervision*. 3:253-268. May, 1917.

There is great divergence in curriculum practices. Discusses these practices and argues that definite curricula should be designed to meet the needs of definite student groups. These groups are to be determined through a scientific survey of the abilities and vocational needs and intentions of the students.

OMANS, A. C. "Enriched manual arts course for the gifted child." *Detroit Journal of Education*. 3:170-173. December, 1922.

Argues that gifted children should not be confined to the academic courses, that there is much in the manual arts which should be acquired by them, and that the work should be differentiated according to the grade of ability.

PECHSTEIN, L. A. "Curricula-making for pupils of varying ability." *Eighth Yearbook of the National Association of Secondary-School Principals*. Cicero, Ill., The Association, 1924. pp. 24-29.

High-school authorities have been tardy in shaping curricula to fit the needs of its pupils. They must study out and apply new curricula true to the modified conception of the aim of education and justified by modern educational psychology.

PEYSER, NATHAN. "The experimental school." (In Bell, J. C. ed. *Contributions to Education*. Yonkers-on-Hudson, N. Y., World Book Company, 1924. Vol. 1, pp. 128-138.)

Experimental school 181, Brooklyn, has as its fundamental objective "the determining of each child's capabilities and needs and the adapting of educational curriculum and procedure to these individual demands."

RAPEER, L. W. "A core curriculum for high schools." *School and Society*. 5:541-549. May 12, 1917.

Believes that the minimal essentials, the fundamental subjects, should be the core curriculum, required of all pupils. Beyond this a differentiated curriculum should be offered for various and varying groups of pupils.

RIPLEY, E. C. "Should essentials of the course of study vary to satisfy social demands in different school districts? Within the same district?" (In National Education Association. *Addresses and Proceedings, 1915.* pp. 354-358.)

The essentials of reading, writing, and arithmetic are advocated for all children for the first four grades. The next two years should foster further advance in these and other studies; marked variation should begin in the seventh grade.

SALISBURY, E. I. "Administrative uniformity of the curriculum." *Educational Administration and Supervision.* 3:275-279. May, 1917.

Summarizes the eight fundamental divergencies between practice and modern educational theory in regard to the curriculum. Suggests a harmonizing of these two elements in which free play will be allowed individual abilities.

SELDEN, F. H. "Differentiation in course of study." *Journal of Education.* 79:580-581. May 21, 1914.

SNEDDEN, DAVID. "Case group methods of determining flexibility of general curricula in high schools." *Seventh Yearbook of the National Association of Secondary-School Principals.* Cicero, Ill., The Association, 1923. pp. 80-87; also in *School and Society.* 17:287-292. March 17, 1923.

Differentiations of curricula should be preceded by systematic analyses of the conditioning qualities and prospects of learners. Learners whose diagnoses are similar should form case groups, having schemes of educational objectives suitable for each. Upon these the curricula should be based.

SNEDDEN, DAVID. "The character and extent of desirable flexibility as to courses of instruction and training of youths of 12 to 14 years of age." *Educational Administration and Supervision.* 2:219-234. April, 1916; also in National Education Association. *Addresses and Proceedings, 1916.* pp. 965-976.

Advocates a curriculum which will modify the rigidity of the one-course curriculum and which will prevent the wasteful possibilities of entire free election. Such a curriculum should be determined both by the capacities of the learners and by their varying needs.

SNEDDEN, DAVID. "Differentiated program of study for older children in elementary schools." *Educational Review.* 44:128-139. September, 1912.

SNEDDEN, DAVID. "The high school of to-morrow." *School Review.* 25:1-15. January, 1917.

Describes a program of studies, such as the author believes it will be in 1925. The curricula and courses of study are decidedly flexible.

SNEDDEN, DAVID. "Junior high school offerings." *School and Society.* 20:740-744. December 13, 1924.

There should be more differentiation of curricula to meet pupil differences in abilities, extra-school conditions and prospects. The author analyzes one method of dissecting certain problems of curricula and suggests possible courses with certain variations for individual programs.

SNEDDEN, DAVID. "Reorganization of education for children from 12 to 14 years of age." *Educational Administration and Supervision.* 2:425-432. September, 1916.

Advocates the junior-high-school type of organization as best providing a flexible course of study for children of these ages.

TUTTLE, E. M. "Individual psychological examinations at the Washington Irving High School." *Bulletin of High Points.* 4:5-13. September, 1922.

Largely a discussion of individual cases. The follow-up work after a test frequently consists in advising students to change their courses of study.

WAPLES, DOUGLAS. "Indexing the qualifications of different social groups for an academic curriculum." *School Review.* 32:537-546. September, 1924.

Describes an "adaptation of Counts' procedure whereby certain criteria may be used in collecting evidence concerning the relative value of the single academic curriculum to pupils of different social groups."

WASHBURNE, C. W. "What do they teach your children?" *Collier's.* 73:18-19. January 26, 1924; also in *Philippine Education.* 20: 572-573. April, 1924.

Forcibly points out that our present courses of study are largely traditional and that they must be reconstructed scientifically according to the needs of children in after life. The procedure is illustrated.

WASHBURNE, C. W. See Part I, Section D, of this bibliography.

WHITNEY, F. P. "Differentiation of courses in the seventh and eighth grades." *Educational Review.* 41:127-134. February, 1911.

That these two grades may function more profitably, the author proposes to give pupils of the seventh grade a choice of courses—one leading specifically to the high school, the other to vocational school or industrial work.

WITHERS, J. W. "The principles on which readjustment of the program of studies should be made." *Proceedings of the High School Conference.* Urbana, Ill., University of Illinois, 1914. pp. 24-32. (University of Illinois. School of Education Bulletin, No. 13.)

A discussion of the theory of the principles advanced. Advocates a fundamental education which provides for marked individual differences in children, is adaptable, and well suited to the nature and capacity of children.

YOUNG, J. R. "Reorganization of the high-school curriculum." *Educational Review.* 53:122-137. February, 1917.

Reorganization may be based on certain underlying principles: (1) conservation of student energy and mental efficiency through elimination of long devotion to studies uninteresting to the individual student; (2) more adherence to the principle of selection and insistence on thoroughness in the essentials of the various courses; (3) more practice in the use and application of the knowledge gained; (4) the introduction of supplementary material dealing with community life, and (5) emphasis on the major industries and social needs of the community.

CONSTITUTION OF THE NATIONAL SOCIETY FOR THE STUDY OF EDUCATION

(As Revised at the 1924 Meeting of the Society)

Article I

Name.—The name of this Society shall be "The National Society for the Study of Education."

Article II

Object.—Its purposes are to carry on the investigation of educational problems, to publish the results, and to promote their discussion.

Article III

Membership.—Section 1. There shall be three classes of members—active, associate, and honorary.

Section 2. Any person who is desirous of promoting the purposes of this Society is eligible to membership and shall become such on payment of dues as prescribed.

Section 3. Active members shall be entitled to vote, to participate in discussion, and under certain conditions, to hold office.

Section 4. Associate members shall receive the publications of the Society, and may attend its meetings, but shall not be entitled to hold office, or to vote, or to take part in the discussion.

Section 5. Honorary members shall be entitled to all the privileges of active members, with the exception of voting and holding office, and shall be exempt from the payment of dues.

A person may be elected to honorary membership by vote of the Society on nomination by the Board of Directors.

Section 6. The names of the active and honorary members shall be printed in the *Yearbook.*

Section 7. The annual dues for active members shall be $2.00 and for associate members $1.00. The election fee for active and for associate members shall be $1.00.

Article IV

Officers.—Section 1. The officers of the Society shall be a Board of Directors, a Council, and a Secretary-Treasurer.

Section 2. The Board of Directors shall consist of six members of the Society and the Secretary-Treasurer. Only active members who have contributed to the *Yearbooks* shall be eligible to serve as directors.

Section 3. The Board of Directors shall be elected by the Society to serve for three years, beginning on January first after their election. Two members of the Board shall be elected annually (and such additional members as may be necessary to fill vacancies that may have arisen).

This election shall be conducted by an annual mail ballot of all active members of the Society. A primary ballot shall be secured in October, in which the active members shall nominate from a list of members eligible to said Board. The names of the six persons receiving the highest number of votes on this primary ballot shall be submitted in November for a second ballot for the election of the two members of the Board. The two persons (or more in the case of special vacancies) then receiving the highest number of votes shall be declared elected.

Section 4. The Board of Directors shall have general charge of the work of the Society, shall appoint its own Chairman, shall appoint the Secretary-Treasurer, and the members of the Council. It shall have power to fill vacancies within its membership, until a successor shall be elected as prescribed in Section 3.

Section 5. The Council shall consist of the Board of Directors, the chairmen of the Society's Yearbook and Research Committees, and such other active members of the Society as the Board of Directors may appoint from time to time.

Section 6. The function of the Council shall be to further the objects of the Society by assisting the Board of Directors in planning and carrying forward the educational undertakings of the Society.

Article V

Publications.—The Society shall publish *The Yearbook of the National Society for the Study of Education* and such supplements as the Board of Directors may provide for.

Article VI

Meetings.—The Society shall hold its annual meetings at the time and place of the Department of Superintendence of the National

Education Association. Other meetings may be held when authorized by the Society or by the Board of Directors.

Article VII

Amendments.—This constitution may be amended at any annual meeting by a vote of two-thirds of voting members present.

MINUTES OF THE CHICAGO MEETING OF THE NATIONAL SOCIETY FOR THE STUDY OF EDUCATION

(February 23, 26, and 27, 1924)

The first meeting of the Society was a joint meeting with the National Vocational Guidance Association and the Department of Vocational Education and Practical Arts of the National Education Association. Owing to errors made by those in charge of arrangements at Chicago, this session could not be held in the Gold Room of the Congress Hotel as advertised and it was necessary to pack to the suffocation point the Florentine Room with its nominal capacity of 600. President Judd called the meeting to order at 8:05 Saturday evening, February 23rd, and after a few words of explanation concerning the matter of the *Yearbooks* and the evening's program, introduced as presiding officer for the evening Mr. John N. Greer, Assistant Superintendent of Schools, Minneapolis, Minnesota, and President of the Department of Vocational Education and Practical Arts of the National Education Association.

The following program was then presented, based upon Part II. Section 1 (Vocational Guidance) of the 23rd *Yearbook* of the Society, entitled "Vocational Guidance and Vocational Education for the Industries":

I. "Recent Indications of Progress in Vocational Guidance."
Harry D. Kitson, Professor of Psychology, Indiana University, and President of the National Vocational Guidance Association.

II. "What Is the Guidance Emphasis in Our Public Schools?"
A. H. Edgerton, Supervisor of Vocational Information and Guidance, Teachers College and the Lincoln School, Columbia University, New York City, New York.

III. "Outstanding Demands for Guidance Activities in a City System."
H. H. Bixler, Director of Vocational Guidance, Atlanta, Georgia.

IV. "How the Problems of Guidance Are Met in a Small City."
John Friese, Technical High School, St. Cloud, Minnesota.

V. "Training Programs for Those Who Are Responsible for Vocational Guidance."
John M. Brewer, Director of Bureau of Vocational Guidance, Harvard University, Cambridge, Massachusetts.

VI. "CRITICAL REVIEW OF PRESENT DEVELOPMENTS IN VOCATIONAL GUIDANCE WITH SPECIAL REFERENCE TO FUTURE PROSPECTS."
George E. Myers, Professor of Vocational Education, School of Education, University of Michigan, Ann Arbor, Michigan.

DISCUSSION:
Helen T. Woolley, Psychologist, Merrill-Palmer School, Detroit, Michigan.
Emery Filbey, Dean of the Extension College, University of Chicago, Chicago, Illinois.

The discussion from the floor was participated in by Mr. H. D. Hatch of Chicago, Asst. Supt. Hamilton of Sioux City, Mr. Humboldt of Rockford, Illinois; Mrs. Woolley of Detroit, and others.

The second meeting of the Society was held in the Gold Room of the Congress Hotel, Tuesday, February 26th at 8:00 p. m. The audience of some 1200 persons completely filled the auditorium and listened with interest to the discussion of Part I of the 23rd Yearbook of the Society, on "The Education of Gifted Children." President Judd presided while the following program was given:

I. "THE WORK OF THE COMMITTEE ON THE EDUCATION OF GIFTED CHILDREN."
Guy M. Whipple, Professor of Experimental Education, University of Michigan; Secretary of the Society, and Chairman of the Committee.

II. "METHODS OF SELECTING SUPERIOR CHILDREN IN SCHOOL."
Bird T. Baldwin, Director of the Iowa Child Welfare Research Station, Iowa City, Iowa.

III. "CHARACTERISTIC AND SIGNIFICANT DIFFERENCES BETWEEN THE "X" AND "Z" PUPILS IN THE DETROIT SCHOOLS."
Anna M. Engel, Assistant Supervisor of Special Education, Detroit, Michigan.

IV. "THE SCHOOL PROGRESS OF SUPERIOR PUPILS UNDER A SYSTEM OF INDIVIDUAL INSTRUCTION."
Carleton W. Washburne, Superintendent of Schools, Winnetka, Illinois.

V. "SCIENTIFIC EVIDENCE BEARING ON SPECIAL TREATMENT OF GIFTED CHILDREN."
Frank N. Freeman, Professor of Educational Psychology, University of Chicago, Chicago, Illinois.

DISCUSSION:

Harvey G. Townsend, Professor of Education, Smith College, Northampton, Massachusetts.

H. H. Goddard, Professor of Abnormal and Clinical Psychology, Ohio State University, Columbus, Ohio.

In the discussion that ensued, remarks were made by Messrs. Rugg, West, Gary Myers, and Miss Laura Zirbes. There was also discussion between Messrs. Baldwin and Freeman concerning certain points which had been introduced by Dr. Freeman in his paper. The discussion was concluded by Dr. Whipple.

Immediately after this program was held the Business Meeting of the Society:

The following changes in the Constitution of the Society (sections not cited to remain as at present) were adopted with no dissenting vote:

ARTICLE II

Object:—Its purposes are to carry on the investigation of educational problems, to publish the results, and to promote their discussion.

ARTICLE III

Section 2. Any person who is desirous of promoting the purposes of this Society is eligible to membership and shall become such on payment of dues as prescribed.

Section 3. Active members shall be entitled to vote, to participate in discussion, and under certain conditions, to hold office.

ARTICLE IV

Officers:—Section 1. The officers of the Society shall be a Board of Directors, a Council, and a Secretary-Treasurer.

Section 2. The Board of Directors shall consist of six members of the Society and the Secretary-Treasurer. Only active members who have contributed to the *Yearbooks* shall be eligible to serve as directors.

Section 3. The Board of Directors shall be elected by the Society to serve for three years, beginning on January first after their election. Two members of the Board shall be elected annually (and such additional members as may be necessary to fill vacancies that may have arisen).

This election shall be conducted by an annual mail ballot of all active members of the Society. A primary ballot shall be secured in October in which the active members shall nominate from a list of members eligible to said Board. The names of the six persons receiving the highest number of votes on this primary ballot shall be submitted in November for a second ballot for the election of the two members of the Board. The two

persons (or more in the case of special vacancies) then receiving the highest number of votes shall be declared elected.

Section 4. The Board of Directors shall have general charge of the work of the Society, shall appoint its own Chairman, shall appoint the Secretary-Treasurer, and the members of the Council. It shall have power to fill vacancies within its membership, until a successor shall be elected as prescribed in Section 3.

Section 5. The Council shall consist of the Board of Directors, the chairmen of the Society's Yearbook and Research Committees, and such other active members of the Society as the Board of Directors may appoint from time to time.

Section 6. The function of the Council shall be to further the objects of the Society by assisting the Board of Directors in planning and carrying forward the educational undertakings of the Society.

ARTICLE V

For "Executive Committee," read "Board of Directors."

ARTICLE VI

For "Executive Committee," read "Board of Directors."

After the adoption of these changes in the Constitution, the following subsidiary recommendation was unanimously adopted:

Subsidiary Recommendation

In order to provide continuity of policy and personnel, it is recommended that the present members of the Board of Trustees and of the Executive Committee and the retiring president constitute the Board of Directors for 1924, that is, until the new plan shall go into operation, and that the present Secretary-Treasurer continue in office until the expiration of his present term of appointment.

It is further recommended that on December 31st, 1924, two members of the then Board of Directors (as determined by the Board) shall retire, and similarly, annually, until the full Board of Directors has been elected as provided by the amended constitution.

Attention was called by President Judd to plans for future *Yearbooks*. The statement of these plans already circulated by mail among the active members of the Society is as follows:

PLANS FOR YEARBOOKS

The officers of the Society have prepared (1) a list of accepted *Yearbook* topics, and (2) a list of other *Yearbook* topics under consideration. It is further planned that these lists may be extended by the addition of topics proposed by active members of the Society and also by the inclusion of *Yearbook* material that may have been initiated by other edu-

cational organizations which may seek alliance with this Society for the purpose of publication. This material must, of course, have the sanction of the Board of Directors, and suitable arrangements must be made for the co-operation of the Society's representatives. It is hoped that funds for subsidizing certain of the Society's undertakings may be secured in the form of subventions from various organizations that are devoted to the facilitation of research in education.

1. *Accepted Yearbook Topics*

I. Methods of Teaching
II. Individualized Instruction
III. The Limitations of Training
IV. The Technique of Curriculum Making
V. The Education of Gifted Children (continuation of present committee)

2. *Yearbook Topics under Consideration*

VI. Remedial Training of Speech Defectives in the Public Schools
VII. Methods of Learning in High-School Subjects
VIII. Elimination and Retardation (Promotion and Non-Promotion)
IX. The Psychology and Pedagogy of Special Abilities and Disabilities
X. Personnel Problems in College Administration
XI. The Development of Musical Appreciation in the Public School
XII. The Non-Intellectual (Dynamic) Traits of Personality
XIII. Studies of the Several School Subjects

Members of the Society who desire to co-operate actively in any of these undertakings are invited to notify the Secretary to that effect. Members who wish to see other topics undertaken are invited to forward to the Secretary detailed statements of such problems, including an outline of the methods by which it is proposed to attack their solution.

On motion of the Secretary, honorary membership was unanimously voted James H. Van Sickle, now of Dade City, Florida, who relinquished the superintendency of schools at Springfield, Massachusetts, August 31, 1923, and who has for many years been actively interested in the welfare of this Society and its undertakings.

On motion of the Secretary, the Society adopted by a unanimous rising vote, the following resolutions:

> WHEREAS, death has removed from the National Society for the Study of Education, Stephen S. Colvin, a man who has for many years served the Society as a member of its Executive Committee, as a contributor to its Yearbooks

of thoughtful and stimulating articles, and as an earnest advocate of its professional aims;

BE IT RESOLVED: That this Society, at its annual meeting held at Chicago, February 26, 1924, hereby bears witness to its deep appreciation of Professor Colvin's services to the Society, to its admiration for his rare personal qualifications as a teacher, an investigator, and a leader in educational thought, and to its sense of abiding loss which his death has brought to us, his fellow-workers.

BE IT ALSO RESOLVED: That these resolutions be entered upon the minutes of this meeting, and that a copy of them be sent to Professor Colvin's family.

On motion, the business meeting then adjourned.

The third meeting of the Society, held in the Cameo Room of the Morrison Hotel, Wednesday, February 27th, at 2:15 p. m., was a joint meeting of the Society and the Department of Vocational Education and Practical Arts of the National Education Association. This meeting was devoted to a discussion of Section 2, Part II (Vocational Education for the Industries) of the *Twenty-third Yearbook* of the Society, prepared under the Chairmanship of A. H. Edgerton, and entitled "Vocational Guidance and Vocational Education for the Industries."

President Judd called the meeting to order and, after brief introductory remarks, turned the meeting over to the Chairmanship of Superintendent Greer.

Save for the absence of Mr. Prosser, the following program was given as scheduled:

I. "PRESENT TRENDS AND FRIENDLY ENEMIES OF INDUSTRIAL EDUCATION."
A. H. Edgerton, Supervisor of Vocational Information and Guidance, Teachers College and the Lincoln School, Columbia University, New York City, New York.

II. "PROVISIONS FOR INDUSTRIAL EDUCATION IN THE PUBLIC SCHOOLS."
Howard Briggs, Director of Vocational Education, Cleveland, Ohio.

III. "WHAT IS THE PLACE OF ANALYSIS IN VOCATIONAL CURRICULUM BUILDING?"
Harry D. Kitson, Professor of Psychology, Indiana University, and President of the National Vocational Guidance Association.

IV. "How Does the Instruction in Vocational Schools Provide for Individual Differences?"
Robert H. Rodgers, Bureau of Vocational Teacher Training, Milwaukee, Wisconsin.

V. "What Methods Are Used for Training Workers in Industry?"
Charles Prosser, Director of William Hood Dunwoody Institute, Minneapolis, Minnesota.

VI. "What Is the Future Outlook for Industrial Education in the United States?"
K. G. Smith, State Department of Public Instruction, Lansing, Michigan.

Discussion:
J. G. Collicott, Superintendent of Schools, Columbus, Ohio.
Erwin E. Lewis, Superintendent of Schools, Flint, Michigan.

Dr. Snedden joined Superintendent Collicott and Superintendent Lewis in the discussion.

Guy M. Whipple, *Secretary*.

SYNOPSIS OF THE PROCEEDINGS OF THE BOARD OF DIRECTORS

At the behest of the Board of Directors, the Secretary has prepared the following synopsis, in order that the members of the Society may be informed concerning the acts and policies of those who are directing the Society. The synopsis does not comprise all the business transacted by the Board, since numerous matters of minor importance have been omitted entirely.

First Meeting of the Board

(Cleveland, Ohio, April 13, 1924.)

Those present were: Messrs. Judd, Koos, Lord, Rugg, Whipple.
Those absent were: Messrs. Courtis, Holmes.

(1) In connection with requests from several persons for permission to quote excerpts from the Society's *Yearbooks*, it was voted that in general there should be a liberal policy in granting permission to quote from the *Yearbooks*, but that all persons who quoted material should be asked to give specific reference to author, volume, date, chapter, and page, and, when the excerpts were at all lengthy, to add some statement calling the attention of the reader to the desirability of referring to the original material.

(2) The Secretary and Dr. Judd were appointed representatives on the Council of the A. A. A. S.

(3) A communication from Dr. Chadsey requested that the Society consider the adoption of a resolution favoring the policy on the part of school boards and superintendents of releasing teachers in service from some portion of their ordinary duties when they were engaged in professional undertakings. It was voted that the Directors recommend such a resolution for favorable action at the 1925 meeting, and Dr. Rugg was requested to draw up a resolution for presentation at that time.

(4) A communication from the United States Commissioner of Education having requested the Society to send a representative, if possible, to the Pedagogical Congress to be held at Santiago, Chile, in the summer of 1925, it was voted that the Directors bring the attention of the Society, at its next meeting, to this Congress and

that we offer our credentials to any member that might be able to attend.

(5) The Directors authorized expenditures for 1924-25 (12 months) as follows:

Secretary's Office	$2,250.00
Printing New Yearbooks	4,500.00
Reprinting Various Yearbooks	1,700.00
Expenses of Directors' Meetings	600.00
Expenses of Yearbook Committees:	
Yearbook on Curriculum	800.00
Yearbook on Method	500.00
Yearbook on Training	700.00
Yearbook on Individual Instruction	150.00

(6) W. S. Gray reported satisfactory progress on the part of his Committee on Reading and promised the completed manuscript for publication in 1925.

(7) H. O. Rugg outlined at some length his plans for a *Yearbook* on "The Technique of Curriculum Making" and there was general discussion concerning its contents.

(8) C. W. Washburne was asked to draw up a more extended outline of the *Yearbook* which he had already sketched informally on the subject of "Individual Instruction." He was asked also to present a list of the members of the committee and urged to plan this book for printing in 1926.

(9) The Board went on record as urging Mr. Courtis to push the work on the *Yearbook* dealing with "Methods" as rapidly as possible and appropriated $500.00 towards the expenses of the committee.

(10) L. M. Terman was asked to report as soon as possible concerning a list of members for a committee, to be headed by himself, to prepare a *Yearbook* on "The Limitations of Training" and a sum not to exceed $700.00 was allowed for holding an early meeting of this committee.

(11) The committee which had prepared the *Yearbook* on "Gifted Children" under the chairmanship of G. M. Whipple, requested that the committee be continued indefinitely with the hope that after several years it might be possible to present another *Yearbook* supplementing the one prepared by this committee in 1924.

(12) Charles S. Berry having reported that he found it for the present inadvisable to prepare a *Yearbook* on "Special Abilities and Disabilities," the Board voted that no action be taken for the present in connection with this *Yearbook*.

(13) "A Report on Colleges of Liberal Arts," prepared by F. J. Kelly, which had been previously submitted for consideration as a *Yearbook* had since then been given publication in other journals, so this topic was stricken from the list of proposed *Yearbooks*.

(14) The *Yearbook* on "Musical Appreciation" had been suggested by G. M. Whipple, who reported that he was not ready at present to make definite proposals, but wished the topic continued on the list of possible *Yearbooks* for future consideration.

(15) Communications having been received from Ernest Burnham, Norman Frost, and Harold Van Buren concerning the desirability of a *Yearbook* dealing with "Rural Education," Mr. Burnham was requested to submit a more detailed account of such a *Yearbook* for presentation at the fall meeting of the Board.

(16) Communications were read from John L. Horn, of Mills College, suggesting a *Yearbook* on "Speech Defectives." The Board felt that this topic would probably interest a comparatively small number of our readers and would, furthermore, be better undertaken by some other agency than this Society.

(17) Communications from Earle Rugg concerning the desirability of a *Yearbook* dealing with "Extra-Class Activities" were read and discussed. The Directors requested L. V. Koos to communicate with Mr. Rugg and others and to bring to the fall meeting a possible program for this *Yearbook*.

(18) The Secretary reported his correspondence with respect to *Yearbooks* and co-operation in their preparation had with the following persons: F. R. Pauly, L. C. Sears, P. F. Finner, W. T. Sanger, Leo Horst, A. R. Mead, Frances F. Bernard, Mary L. Patrick, E. F. Buchner, Lida B. Earhart, Agnes L. Rogers, Lucia B. Mirrielees, and Edward Rynearson.

The Board expressed its appreciation of the excellent spirit of co-operation shown by these members.

(19) On the basis of the decision made with respect to the foregoing *Yearbooks*, the Directors proposed that certain general prin-

ciples should be regarded as controlling the organization and operation of the *Yearbook* committees in general. These general principles included the following:

(a) All *Yearbooks* must be passed upon and specifically authorized by the Board of Directors before they become official undertakings of the Society.

(b) The chairman of each *Yearbook* committee, having been appointed by the Board of Directors, is expected, as soon thereafter as feasible, to propose to the Board the names of the persons whom he desires to have form the personnel of his committee, and these appointments must have the sanction of the Board to become official.

(c) The chairman may make use of the services of other persons than the authorized committee members, both in consultation and in contributing to the *Yearbook,* but these additional persons are to be regarded as "associates" of the official committee, not as "members" of it.

(d) Funds appropriated for the holding of committee meetings may be used to cover the travelling expenses of committee members, but not of associates.

(e) The Society will not be liable for expenses incurred by committee chairmen in excess of the amounts specified for each committee by the Board of Directors.

(f) Committee chairmen are expected to use reasonable care to arrange their committee meetings with respect to number, time, and place in such a way as to conserve the financial resources of the Society.

(g) Each committee chairman is to present to the Board of Directors at its annual fall meeting a report of progress upon the work going on under his direction.

(h) Every effort should be made to present at the fall meeting of the Board of Directors (to be held on or about October 1st whenever possible) as complete a formulation as possible of any *Yearbook* which it is proposed to publish for the meeting of the Society to be held the February following.

(20) C. H. Judd was unanimously elected Chairman of the Board of Directors, to serve until December 31, 1924.

(21) C. H. Judd and H. W. Holmes were selected as the two

members to retire December 31, 1924—retiring members being, under the Constitution, eligible for re-election.

(22) The Secretary was requested to present at the fall meeting arguments for and against the continuance of the present forms of membership.

Second Meeting of the Board

(Chicago, Illinois, November 8, 1924.)

Present: Messrs, Courtis, Holmes, Judd, Koos, Lord, Rugg, Whipple.

(1) The "Announcement," as proposed for printing by the Secretary, was approved.

(2) A request for rates for advertising space in the *Yearbook* was received. The Directors approved the reply which had been made by the Secretary to the effect that advertising, except for the list of the Society's own publications, was contrary to precedent and to the spirit of the Society's *Yearbooks*.

(3) Correspondence was submitted between the Chairman and Secretary of the Board and officials of Section Q of the A. A. A. S. The Board endorsed the position taken by its representatives to the effect that it seemed undesirable to arrange for a formal meeting of this Society in December in affiliation with Section Q.

(4) It was voted that the list of active members to be printed in the *Yearbook* should hereafter be made up of active members of the Society as of December 31st of the preceding year, rather than limit it to those who had at that time paid their dues in advance for the following year.

(5) The Secretary and H. W. Holmes were made a committee with power to arrange a contract with the Atlantic Printing Company for the printing of the 1925 *Yearbooks*.

(6) It was voted to enter on the minutes as a matter of record, the Secretary's statement concerning progress being made in developing his office to a point where it might operate independently of any connection with institutions to which he might be attached. The Secretary's report also showed that the time expended by him upon the Society's business averaged more than ten hours a week.

(7) It was voted that the budget for each calendar year be voted

at the fall meeting preceding that year; also that as a matter of policy, funds appropriated for a budget are to be regarded as charges against the Society—that is, as not available for any other activity than the one for which they have been appropriated.

(8) It was estimated that $3,850.00 was already committed as possible expenditures prior to January 1, 1925, of which amount $2,200.00 was still tied up in the form of appropriations made to *Yearbook* committees. In addition, the following budget was voted for 1925:

For the Secretary's Office	$2,500.00
For Meetings of the Board of Directors	1,320.00
For Printing and Distributing *Yearbooks*	8,500.00
For further expenses of *Yearbook Committees*	850.00

(9) It was voted not to include in the final ballot, to be mailed to the active members for the election of two members of the Board, any statements concerning the professional activities of the persons named in the ballot. It was also voted that the signatures of active members be not required in returning these ballots.

(10) Correspondence was reported by the Secretary dealing with the protests which had been made concerning the policy of the Society in the election of its Board of Directors. The Board voted unanimously that no further action need be taken concerning the matter raised in this correspondence.

(11) On the basis of a summary of the arguments for and against continuing the present forms of membership, it was unanimously voted that no change be made in these forms, but that so far as possible the desirability of active membership be increased by offering to active members various types of service and opportunities in addition to the privileges they already enjoy.

(12) C. W. Washburne submitted a typewritten outline of a *Yearbook* on "Adapting the Schools to Individual Differences." The Board authorized the publication of this *Yearbook* in 1925 and appropriated not to exceed $200.00 (in place of the $150.00 previously appropriated) for the expenses of preparing this *Yearbook* for publication. It was further voted that in arranging the program for this *Yearbook* an effort be made to secure 30 minutes of free discussion from the floor, and that a summary of the salient con-

tentions of the *Yearbook* be mailed in November to active members of the Society for the purpose of stimulating this discussion.

(13) W. S. Gray submitted an outline of the *Yearbook* on "Reading." It was voted that this be printed in 1925 and that a similar effort be made, as in the case of the foregoing *Yearbook*, to secure active discussion of its contents from the floor at the annual meeting.

(14) H. O. Rugg reported progress made by the committee of which he is chairman, in preparation of a *Yearbook* on the "Technique of Curriculum Making," and similar reports were made for their respective committees by Messrs. Courtis, Terman, and Koos. (Statements concerning these *Yearbooks* appear elsewhere in this volume.)

The Board appropriated a sum not to exceed $800.00 for the use of the Committee on "Extra-Class Activities" with the expectation that this *Yearbook* would be ready for printing in 1927.

(15) Correspondence was read by C. H. Judd and Miss Hoefer concerning the possibility of a *Yearbook* dealing with "Health Education." It was voted that in view of our present commitments and of the numerous agencies that might better undertake the assembling of material on this topic, that we should not undertake a *Yearbook* on "Health Education."

(16) A proposal from Mr. Gary Myers suggesting a *Yearbook* on "The Prevention of Errors" was acted upon similarly to the foregoing proposal.

(17) The Secretary suggested that a *Yearbook* on "Mental Hygiene and the Schools" ought to meet a ready reception, and outlined his ideas of its contents. The Secretary was requested to communicate with various persons and report at the next meeting of the Board concerning the feasibility of such a *Yearbook*.

(18) It was voted that the next meeting of the Directors be held Saturday, February 1, 1925, in connection with the session of the National Education Association, and that there be a regular meeting in the fall, in October or November. The decision as to whether there should also be a meeting in May was deferred to the February meeting.

(19) It was voted that the Chairman of each *Yearbook* com-

mittee be asked to report at each fall meeting, showing the progress of his committee during the past year and citing its needs for the ensuing year.

(20) It was voted that the clerical expenses of committees be regarded as a legitimate charge against the appropriation of these committees, in addition to the travelling expenses incurred in holding meetings of the committees.

(21) In view of a suggestion that one of the *Yearbooks* be dedicated to an individual, it was unanimously voted that, as a matter of policy, the Board does not favor the adoption of this suggestion.

(22) C. H. Judd was requested by the Board to prepare, for presentation at the February meeting, resolutions on the death of S. C. Parker, who had been prominently connected with the Society for many years.

(23) It was voted that the selection of the presiding officers for the February meeting be left to C. H. Judd, with power.

REPORTS ON YEARBOOKS IN PREPARATION

In order that members of the Society may be informed concerning the activities that are in progress in the preparation of forthcoming *Yearbooks*, the chairman of each of the committees now definitely under way has been requested by the Board of Directors to present brief reports to indicate the purpose and scope of his *Yearbook*, the method of procedure that is being followed, and the progress that has been made. Members of the Society are once more urged to communicate freely with these chairmen upon any of the matters here set forth, to the end of making each *Yearbook* a truly co-operative undertaking.

I

THE YEARBOOK ON "THE TECHNIQUE OF CURRICULUM-MAKING"*

Chairman: Dr. Harold O. Rugg, The Lincoln School of Teachers College, New York City.

The committee in charge of the preparation of this *Yearbook*, which is expected for publication in 1926, consists of Messrs. Franklin Bobbitt, F. G. Bonser, W. W. Charters, Ernest Horn, W. H. Kilpatrick, and Harold Rugg, chairman. A meeting of some members of the committee was held in April, and of others of the committee in September, 1924.

The intention of the committee is to put forth a critical study, frankly theoretical, organized around a series of moot questions. The assembling of previous research studies on the curriculum was originally contemplated, but is now abandoned because this has now been done by the Curriculum Commission of the National Education Association. An account may, however, be included of actual curriculum-making now going on in public school systems. The introductory material will include some discussion of the strategic importance of the curriculum, an account of the scientific movement in curriculum-making and the contribution of the "free-school" movement. The body of the *Yearbook*, however, will center upon the "how" of curriculum-making—how objectives shall be

* In the absence of any statement from the Chairman, this account has been prepared by the Secretary on the basis of notes taken of a statement by Dr. Rugg to the Board of Directors.

determined, how materials shall be selected, how modes of organization shall be determined, and how the grade-placement of materials shall be determined. An annotated bibliography will be prepared.

II

The Yearbook on "Methods of Measuring the Efficiency of Teaching"

Chairman: Stuart A. Courtis, School of Education, University of Michigan, Ann Arbor, Michigan.

The advances made possible by the scientific study of educational problems have served to direct the attention of certain groups of educational workers to method in a new way. On the basis of certain evidence, the hypothesis has been formulated that "the value of what a child learns is determined almost completely by the way he learns it;" that is, by the method of teaching employed. The 'new' education, which throughout the world is winning advocates at an astonishingly rapid rate, is characterized by changes in classroom procedure far more radical than those in subject matter. If the claims made for the effect of method should prove to be well founded, then as revolutionary a transformation is likely to take place in education as took place when astrology changed to astronomy and alchemy to chemistry. The problem of method would, for our age, become the crucial problem in education.

The committee having this *Yearbook* in charge proposes to determine the validity of the fundamental hypothesis quoted above. The problem resolves itself into two parts, each of which should result in a yearbook. The first need is for reliable means of determining the method of teaching being used by a teacher and the degree of skill with which it is used. The second need is for reliable means of measuring the various aspects of the effects produced and thus determining the efficiency of the teaching from the various points of view.

The law of the single variable demands that, in the final measurement of comparative efficiency, method be the only variable factor. This means that teachers using different methods must be of comparable degrees of skill in the control of their method. It means also

the clear recognition of a fact, too often ignored in educational experimentation, that the product of teaching effort has many aspects and that no measurement of comparative efficiency is valid which does not include comparison of the effects produced in all the significant aspects.

Specifically, the work of the committee will consist of the following:

1. Determination of the significant objective characteristics of the various methods of teaching (question-and-answer method, project, problem, lecture method, etc.) and of methods of analysis, classification, and identification.

2. Construction of scales for the measurement of teachers' skill in the use of the various methods.

3. Determination of the significant products of teaching effort (as for a particular lesson in arithmetic, knowledge of how to add fractions, skill in adding fractions, initiative to use the skill in appropriate life situations, etc.).

4. Construction of valid tests for the measurement of each of the significant products.

5. Measurement of the comparative efficiency of the various methods of teaching in terms of the products determined upon.

6. Evaluation of results from the point of view of the determination of the contributions of method to results.

The various phases of the work of the committee differ greatly in their difficulty and in the time that will be required to complete them. The first step is comparatively simple. The second is only slightly more difficult. It is expected that these parts of the committee's work will be ready for publication in 1926. The third, fourth, and fifth steps call for the solution of many puzzling problems, and while the committee hopes to have further results to report by 1927, no definite time can be set at present for the completion of the entire labors of the committee.

All persons willing to co-operate with the committee by attempting objective definition and analysis of teaching procedure or by reporting actual observation of lessons under the conditions laid down by the committee are requested to write to the chairman, describing the type of assistance they are willing to render.

III

The Yearbook on the "Possibilities and Limitations of Training"

Chairman: Dr. Lewis M. Terman, Stanford University, California

The committee on the 1927 *Yearbook*, consisting of Bagley, Baldwin, Brigham, Freeman, Pintner, Whipple, and Terman (chairman), met at Chicago on November 9, 1924, and outlined its program of work. This *Yearbook* will be devoted entirely to investigations on the *Possibilities and Limitations of Training*. It is the ancient question of nature *versus* nurture, with special reference to their influence upon the scores earned in intelligence and achievement tests. The committee regards most of the studies which have been made in this field as ambiguous and believes that the problem should be taken up anew in investigations which would be more conclusive.

The issues involved are of such fundamental importance in education that the committee hopes it may be possible to enlist the co-operation of many investigators. The paragraphs which follow indicate types of experiments that might be expected to throw light on the problem. The list is not intended to be exhaustive. Perhaps other lines of attack, even more promising, will be found. Minor studies can be published in the *Yearbook* in full. More extensive investigations could be published separately in monograph or book form and be merely summarized in the *Yearbook*. Manuscript for the 1927 *Yearbook* should reach the chairman by September 1, 1926.

1. Freeman and Terman have secured a grant from the Commonwealth Fund for a co-operative study of adopted children. Freeman will compare the mental resemblance between adopted children and their true sibs with that obtaining between adopted children and their foster sibs. Terman will compare true parent-true child resemblance with foster parent-adopted child resemblance. Both Freeman and Terman will welcome the co-operation of other investigators. Terman is using only foster children who were adopted in the first year of life by persons who had no knowledge of their heredity.

2. Studies should be made of the effect on achievement and intelligence scores of intensive training in the school subjects or in mind-training exercises. Groups thus trained for 6 to 12 months should be compared with control groups of equal ability at the beginning.

3. Intelligence tests should be given to relatively uneducated groups of children and followed by re-tests of the children after they have been subjected to good educational influences. Children entering school from exceptionally ignorant homes might be given B-S tests at school entrance and again after a year of schooling. Children adopted from poor homes into good homes might be followed up and retested. In all such experiments children of foreign parentage should be excluded.

4. Detailed clinical studies should be made of the results of special tutoring of individual cases of low I.Q. It is, of course, important that the progress made by such cases be rigidly checked up by objective methods.

5. Studies should be made of the success with which children of given mental ages can be taught material commonly considered too advanced for those mental ages. Examples: reading at mental age 4, multiplication table at mental age 6, fractions at mental age 6 or 7, map reading at mental age 7, "lessons" from fables or stories at mental age 8, reversing hands of clock at mental age 9, etc. Obviously, there is room for any number of experiments in this line.

6. It is extremely desirable to compare the relative influence on pupils' intelligence and achievement scores of such factors as (a) teacher training, teacher expertness, teacher salary schedules, teacher experience, etc., and (b) mental age of the pupils.

7. Studies should be made of the relative influence of mental age and length of school attendance upon achievement as measured by reliable and valid educational tests. Among 1000 ten-year-olds (excluding children of foreign parents) the length of school attendance would probably range from a few months to 50 months. To what extent do their achievement test scores depend upon attendance and to what extent upon Binet mental age? By utilizing the method of partial correlation to render constant the factor of age, it would be feasible to use children covering a wide range of ages. It may be pointed out that in making comparisons of this kind

most of the group intelligence tests are unsatisfactory because of too close similarity to the achievement tests.

8. The effects of improved nutrition upon intelligence and achievement scores should be measured. Similarly, the effects of operations and corrective work with crippled or sickly children.

9. Conclusive investigations should be made of the extent to which such musical abilities as pitch discrimination and sense of rhythm can be improved by training. Seashore has promised a contribution in this line.

10. In several types of investigations of the relative influence of endowment and training it is necessary to have a quantitative rating of the cultural status of the child's home. No satisfactory rating scale for this purpose exists. It is hoped that someone will undertake to complete one before December, 1925, or at latest before September, 1926.

11. There is another type of investigation that would be desirable, namely, teaching various bits of skill or knowledge to children of different mental ages and noting the amount of time required to attain a given degree of mastery at each mental age. Examples: learning new names for a list of common objects, to repeat the Greek alphabet, to use the Roman numerals, to say the alphabet backwards, to extract square root or cube root, to copy a diamond or other geometrical design, to tie a bow knot, to write codes, to tell time by the clock, to grasp the solution of a puzzle when shown, etc. Such experiments, although they would not afford direct evidence on the nature-nurture problem, would throw considerable light on the extent to which mental age classifications are desirable for purposes of instruction.

In order to avoid duplication of effort, those who are willing to undertake an investigation for this Yearbook should communicate with the chairman of the committee. Among those who have already promised are Seashore, Kelley, Mrs. L. S. Hollingworth, Franzen, and Ruch. It is hoped that many others will volunteer.

IV

The Yearbook on "Extra-Class Activities"

Chairman: Professor Leonard V. Koos, University of Minnesota, Minneapolis, Minnesota.

Among the aspects of school life, especially in our secondary schools, which have come in for increasing attention in recent years, are what are commonly referred to as "extra-curricular activities," *e. g.*, athletics, dramatics, debating, musical organizations, general organization of the pupil body, student councils, etc. In many places the amount of the pupils' time and energy devoted to them has been rapidly increasing, in some instances owing to what is intended to be constructive encouragement by teachers and school heads. In view of the dearth of materials helpful to those desirous of encouraging proper development in this field, the Society is fostering the assembly and publication, not later than 1927, of a yearbook devoted exclusively to problems falling under this main head. Those who have had opportunities to secure special information or experiences in this field should communicate with the chairman as soon after reading this announcement as possible.

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